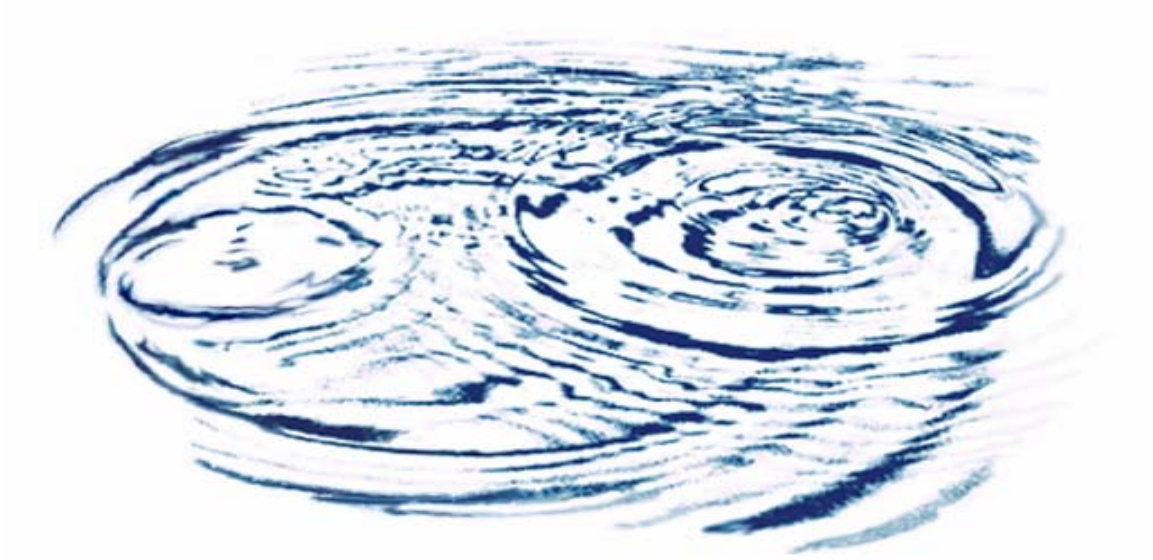
SAN GABRIEL
County Water District

# 2010
# Urban Water Management Plan



## MAY 2011

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## SAN GABRIEL COUNTY WATER DISTRICT

# URBAN WATER MANAGEMENT PLAN

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## MAY 2011

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# SECTION 1

# INTRODUCTION

Section 10620.

*(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).*

*(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.*

*(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.*

*(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.*

*(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

*(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.*

*(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

## 1.0 URBAN WATER MANAGEMENT PLAN [SECTION 10617]

*"Urban Water Supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.*

This report was prepared in accordance with the California Urban Water Management Planning Act (Act)[1] which became effective on January 1, 1985 (Appendix A). The Act requires each urban water supplier, providing water to more than 3,000 customers or supplying more than 3,000 acre-feet of water per year, to prepare and adopt an Urban Water Management Plan (hereinafter Plan or UWMP). In addition, the Act requires the Plan to be reviewed and updated every five years. The primary objective of the Plan is to achieve conservation and efficient use of urban water supplies and to ensure sufficient water supplies will be available for future beneficial use. This Plan is an update of San Gabriel County Water District's (SGCWD) 2005 Urban Water Management Plan and reviews the activities of SGCWD as a retail water supplier.

[1] Water Code Sections 10610 through 10657

## 1.1 COORDINATION

### 1.1.1 PREPARATION

*Section 10620(d)(2)*
*Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

SGCWD has coordinated the preparation of the 2010 Urban Water Management Plan with water management agencies, public agencies, cities and counties within its service area. Table 1 lists the agencies with which SGCWD coordinated the preparation of the Plan.

SGCWD's water management agencies consist of Main San Gabriel Basin Watermaster, Raymond Basin Management Board and Upper San Gabriel Valley Municipal Water District (Upper District). SGCWD's serves water to customers within the Cities of San Gabriel, Rosemead, Temple City and unincorporated portions of the County of Los Angeles. SGCWD has invited water management agencies, public agencies, cities and counties to participate in the development of the Plan. A copy of the notification letters sent to agencies located in Appendix B.

### 1.1.2 COMMENTS

*Section 10621(b)*
*Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.*

No comments were received by SGCWD from water management agencies, public agencies, cities and counties.

### 1.1.3 PROVIDING COPIES OF PLAN

*Section 10635(b)*
*The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.*

Within 30 days of adoption of the Plan by SGCWD, a copy of the Plan will be filed with the State of California, Department of Water Resources, the California State Library, and with the cities or county located within SGCWD's service area.

### 1.1.4 PUBLIC REVIEW

*Section 10642*
*Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.*

The draft plan was made available for public review and comment.

### 1.1.5 PUBLIC HEARING

*Section 10642*
*Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.*

SGCWD made the draft 2010 Plan available for public review and a public hearing was held on May 24, 2011. Public notification of the hearing is required pursuant to Section 6066 of the Government Code. All relevant public agencies, water companies, cities, and counties did not appear at the public hearing. SGCWD did not receive comments at the public hearing. Upon completion of the public hearing, SGCWD adopted the Draft Plan, including any modifications resulted from the public hearing, as its 2010 UWMP. A copy of SGCWD's adopted resolution is located in Appendix C.

## 1.2 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

### 1.2.1 PLAN FILING

*Section 10621(c)*
*The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640) (10621(c)).*

Any amendments to, or changes in the plan will be adopted and filed as required.

### 1.2.2 PLAN ADOPTION

*Section 10642*
*After the hearing, the plan shall be adopted as prepared or as modified after the hearing (10642).*

After the public hearing the plan will be adopted.

### 1.2.3 PLAN IMPLEMENTATION

*Section 10643*
*An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.*

The plan will be implemented as adopted.

### 1.2.4 PLAN SUBMISSION

*Section 10644(a)*
*An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption (10644(a)).*

Within 30 days of adoption of the Plan by SGCWD, a copy of the Plan will be filed with the State of California, Department of Water Resources, the California State Library, and with the cities or county located within SGCWD's service area.

### 1.2.5 PLAN AVAILABILITY

*Sect5ion 10645*
*Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

Within 30 days of filing of the Plan to the state, a copy of the Plan will be available for public review during normal business hours at the SGCWD's office.

## 1.3 WATER MANAGEMENT TOOLS

*Section 10620*
*(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

This Plan describes the management tools and options used by SGCWD to maximize local resources and minimize the need to import water. The management tools and options used by SGCWD include groundwater management (Section 3), Demand Management Measures (Section 6), Future Water Supply Projects (Section 4) and Recycled Water Use (Section 4).

## 1.4 CHANGES TO THE PLAN

*(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.*

*(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.*

*(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

There have been many amendments added to the Plan and some reorganization of the water code sections since SGCWD's last UWMP update in 2005. The additions and changes are as follows:

1) Senate Bill 1087, Requires Reporting of Water Use Projections for Lower Income Households
2) Assembly Bill 1376, Requires 60 days notice of a public hearing on an UWMP
3) Assembly Bill 1420, Conditions State Funding
4) Senate Bill 7, Requires 20 Percent Reduction in Use by 2020

In accordance with Water Code Section 10621, SGCWD has reviewed its 2005 UWMP and appropriate changes were included.

# SECTION 2

# SYSTEM DESCRIPTION

## 2.0 BACKGROUND

SGCWD is a retail water company serving portions of the Cities of San Gabriel, Rosemead, Temple City, and unincorporated territory of Los Angeles County. SGCWD depends on groundwater supplies as its existing and planned source of water supply. SGCWD has adjudicated water rights from Raymond Basin and Main Basin. In addition, SGCWD provides funds to purchase untreated imported water from the Upper District to offset groundwater demands in excess of SGCWD's water rights. Upper District is a wholesaler which supplies supplemental imported water from Metropolitan Water District of Southern California (MWD) to its sub-agencies, including SGCWD. More information on SGCWD's groundwater rights and supplemental water is provided later in Section 3.

The San Gabriel County Water District was organized on November 12, 1921 under the provisions of the County Water District Act (Statutes 1913, P. 1049). Under the provisions of this statute the people of any area, which may include either incorporated or unincorporated areas within a county, or both, may organize a District for the purpose of serving its inhabitants with water for all purposes, including domestic, agricultural, and industrial uses. The assets and property of SGCWD are publicly owned, that is, belong to the people in SGCWD, in the same manner as property of a City is owned by the people in the City.

The first water board election was held on January 10, 1922. The first meeting of the Board of Directors of the San Gabriel County Water District was held on February 20, 1922, at the District's office, then located at 538 West Mission Drive, San Gabriel.

Under the provisions of the County Water District Act, the control and supervision of the affairs and business of SGCWD is vested in a Board of Directors who are elected by the voters of SGCWD in a like manner as the voters in a City elect a City Council to transact the affairs and business of a City. The Board approves and authorizes all expenditures of the District funds and establishes rates to be charged for water, and may, if necessary, levy taxes for the payment of District bonds or operating expenses.

The Board of Directors is composed of five members, who must be residents of SGCWD. The Board has endeavored to remain advised of all conditions affecting the water supply at all times. SGCWD has studied these conditions throughout the years, has secured and protected its water rights, and has planned its distribution system so that SGCWD will be able to meet all requirements of the community it serves.

The mission of San Gabriel County Water District is to provide high quality water for residential, commercial, industrial and fire protection uses that meets or exceeds all local, state and federal standards and to provide courteous and responsive service at the most reasonable cost to our customers.

## 2.1 SERVICE AREA

### 2.1.1 PHYSICAL COMPONENT

*Section 10631(a)*
*Describe the service area of the supplier (10631(a)).*

Regionally the SGCWD is located within the San Gabriel Valley, which is bounded by the San Gabriel Mountains to the north, San Jose Hills to the east, Puente Hills to the south, and by series of hills to the west. Within the San Gabriel Valley are a number of groundwater basins. Underlying SGCWD boundaries are the Main Basin and the Raymond Basin. The Main Basin and Raymond Basin are separated from the coastal plain of Los Angeles County by Whittier Narrows, a natural topographic divide and subsurface outlet for the movement of groundwater from the Valley to the coastal plain. The Main Basin and the Raymond Basin underlie most of the San Gabriel Valley and are separated from each other by Raymond Fault located in the western part of the San Gabriel Valley (Valley), as shown on Plate 1.

All of the water supplied by SGCWD is obtained from the Main San Gabriel Basin (Main Basin). In addition, SGCWD has water rights from the adjacent Raymond Basin.

When SGCWD was first organized, it included property lying within the City of San Gabriel and also unincorporated areas lying outside of that City. Since that time, there have been several annexation proceedings whereby additional areas have been added to SGCWD and at the present time approximately 60 percent of the area of SGCWD lies within the City of San Gabriel and the remaining 40 percent in the City of Rosemead, City of Temple City and unincorporated County areas.

SGCWD’s service area consists of about 2,680 acres and is located in the westerly part of the San Gabriel Valley in Los Angeles County, as shown on Plate 1. SGCWD has three reservoirs with a combined water storage capacity of 12.8 million gallons. Currently five active wells supply water to meet the customers' needs. As of 2010, there are 82 miles of water mains delivering water to the customers' meters.

SGCWD provides retail water to single family residential and commercial customers (multi-family residential, commercial, irrigation and governmental agencies). There are about 9,000 service connections within the SGCWD system, of which about 80 percent are domestic single family meters and about 20 percent are service connections for commercial meters, institutional/governmental/ and landscape.

The SGCWD's service area is separated into two pressure zones as shown on Plate 2. The Longden Zone is the lowest, is served by gravity from reservoirs and supplemented by water delivered directly into the system from local wells. The upper pressure zone, the Van Nuys Zone is served by gravity from a reservoir and supplemented by water delivered into the system from local wells and booster pumps drawing water from a reservoir in the Longden Zone.

### 2.1.2 SERVICE AREA CLIMATE

*Section 10631(a)*
*(Describe the service area) climate*

The service area of SGCWD in the San Gabriel Valley has a dry climate and summers which can reach temperatures in the high 90s. The historical rainfall in San Gabriel Valley since water year 1958-59 is shown in Table 2. The annual rainfall is 17.8 inches, the average annual temperature is 63.8$^{o}$F and the annual evapotranspiration is 55.1 inches in the San Gabriel Valley as shown in Table 3. The annual rainfall in San Gabriel Valley in 2008-09 was 14.0 inches, which was about 80 percent of the normal conditions for the area. Table 2 shows the annual rainfall in the San Gabriel Valley for the past ten water years. In the last ten water years, the annual rainfall of 17.8 inches was reached in 2002-03, as shown on Table 2. Typically outdoor water uses, including irrigation, account for about 50 percent of residential use. Although changes in climatic conditions will have an impact, the projected water supply demands will be based on average year, single dry year and multiple dry-years.

## 2.2 SERVICE AREA POPULATION

### 2.2.1 PRESENT POPULATION

*Section 10631(a)*
*(Describe the service area) current and projected population . . . The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier . . .).*

SGCWD service area consists predominantly of single family residential areas, with few multi-family residential areas and a small number of commercial centers. SGCWD currently serves about 45,000 people. SGCWD's service area is located in a fully developed area, therefore, little population growth is expected in the next twenty years. As previously stated approximately 60 percent of the service area is in the City of San Gabriel with the remaining 40 percent being in the City of Rosemead, City of Temple City and unincorporated Los Angeles County The growth rate projections were obtained from the Southern California Association of Governments (SCAG). Table 4 presents the historical and projected population of the service area.

The present population of SGCWD was estimated by using the 2000 population data on a census tract level from the US Census Bureau. The 2000 census tract boundaries were super imposed over district service area map. The population of

SGCWD was then estimated. The 2000 SGCWD population was then used to estimate for future years population based on the growth rate of the City of San Gabriel. The City of San Gabriel comprises the largest component of SGCWD's population and service area.

### 2.2.2 FUTURE POPULATION OF SERVICE AREA

*Section 10631(a)*
*. . . (population projections) shall be in five-year increments to 20 years or as far as data is available).*

See Table 4 for population projections for the next 20 years.

### 2.2.3 OTHER DEMOGRAPHIC FACTORS OF SERVICE AREA

*Section 10631(a)*
*Describe . . . other demographic factors affecting the supplier's water management planning).*

After population, the next demographic factor impacting the water management planning is conversion of land use from single family residential to multifamily residential. Because SGCWD is built-out the primary means of increasing population is to convert land uses from single family residential to multifamily. Although the redevelopment allows for greater density the new construction requires higher efficiency plumbing fixtures and there is less land available for landscaping and what landscaping that is uses is usually more water efficient that existing landscaping. This trend is slow but it should help to lower the per capita water demand within SGCWD boundaries.

# SECTION 3

# SYSTEM DEMAND

## 3.1 WATER DEMANDS

### 3.1.1 HISTORICAL WATER SYSTEM DEMANDS

*Section 10631(e)(1) and (2)*
*Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural).*

SGCWD's records indicate during 2009-10 there was a total of 7,257 metered accounts for Single-Family (SF) water use and 709 Multi-Family (MF) meter accounts. In addition there are 649 metered accounts for commercial, 265 metered institutional/governmental accounts, and 139 landscape water accounts using water (see Table 5 for a breakdown of uses in 2005 and Table 6 for the 2010 breakdown). There were no unmetered accounts for any water use sectors in the SGCWD's service area in 2000, 2005, and 2010. There will not be any unmetered accounts in SGCWD's service area in 2015, 2020, 2025, and 2030.

The total historical water production and sales from fiscal year 1995-1996 through fiscal year 2009-10 is presented in Table 7. Records of annual water production and sales for SGCWD indicate how the demand has remained relatively stable over the years. Unaccounted water, indicated as percent loss, is generally in the average 2.5 percent, however, the water loss ranges from a low of 2 percent in fiscal years 2004-05 to a high of 4.2 percent in fiscal year 2009-10.

A summary of SGCWD historical water demands based on available records for fiscal years 2004-05 and 2009-10 are shown in Tables 5 and 6, respectively.

### 3.1.2 FUTURE DEMANDS

Future demands for the SGCWD water system have been calculated in Table 7 based on the population projections shown in Table 4 as well as the impacts of Senate Bill 7. These results are tabulated in Tables 8, 9, and 10. Section 3.2 provides discussion on determining the per capita water use and projected water uses to comply with SB 7.

### 3.1.3 OUTSIDE THE SYSTEM DEMANDS

SGCWD does not sell water to other agencies as is reflected in Table 11.

### 3.1.4 ADDITIONAL WATER USES AND LOSSES

There are no other existing or projected water uses for water from the SGCWD water system which is shown in Table 12. The system losses, current and projected, are also shown in Table 12.

### 3.1.5 LOWER INCOME DEMANDS

*Section 10631.1(a)*
*The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.*

SGCWD does not have records related to lower income households. The 2000 census indicated that 12.5 percent of the families in San Gabriel were below the poverty line. It is also assumed that these families would primarily reside in multifamily properties. For purposes of this analysis it was assumed that 80 percent of families below the poverty line reside in multifamily projects. In addition, it was assumed that the poverty rate remains in the future. Table 13 data provides water demand for lower income households.

### 3.1.6 TOTAL WATER USE

The total water use including implementation of water reduction efforts required by SB7 is summarized in Table 14.

### 3.1.7 DEMANDS PROVIDED TO WHOLESALE SUPPLIER

The projected demands are summarized in Table 15. The projected demands assume that the population growth follows as discussed in Section 2 and the per capita demand is in compliance with SB X7 as discussed later in this Section.

## 3.2 BASELINES AND TARGETS

*Section 10608.20(e)*
*An urban retail water supplier shall include in its urban water management plan . . . due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data (10608.20(e)).*

The Baseline Daily Per Capita Water Use is defined as the average water use, expressed in gallons per capita per day (GPCD), for a continuous, multi-year baseline period. There are two different baseline periods for calculating Baseline Daily Per Capita Water Use, as follows (CWC Sections 10608.20 and 10608.22):

- *The first baseline period is a continuous 10- to 15-year period, and is used to calculate Baseline Per Capita Water Use per CWC Section 10608.20. The first baseline period is determined as follows:*

    - *If recycled water makes up less than 10 percent of 2008 retail water delivery, use a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*
    - *If recycled water makes up 10 percent or more of 2008 retail water delivery, use a continuous 10- to 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

  The District's recycled water use is less than 10 percent of its 2007-08 retail water delivery. (Note: The District's water use data are reported on a fiscal year basis. Therefore, fiscal year 2007-08 data are used instead of calendar year 2008, as stated in the CWC.) Consequently, the first baseline period will consist of a continuous 10-year period that can be selected between 1995-96 and 2008-09. See Table 16 for selected base period ranges criteria.

- *The second baseline period is a continuous five-year period, and is used to determine whether the 2020 per capita water use target meets the legislation's minimum water use reduction per CWC Section 10608.22. The continuous five-year period shall end no earlier than December 31, 2007, and no later than December 31, 2010.*

  The second baseline period consisting of a continuous five-year period can be selected between 2003-04 and 2008-09. See Table 16 for selected base period ranges criteria.

**Unless the urban water retailer's five-year Baseline Daily Per Capita Water Use per CWC Section 10608.12(b)(3) is 100 GPCD or less, Baseline Daily Per Capita Water Use must be calculated for both baseline periods.**

The calculation of the Baseline Daily Per Capita Water Use entails the following four steps:

*Step 1* *Calculate gross water use for each year in the baseline period using Methodology 1 in DWR's guidance document. According to Methodology 1, gross water use is a measure of water supplied to the distribution system over 12 months and adjusted for changes in distribution system storage and deliveries to other water suppliers that pass through the*

*distribution system. Recycled water deliveries are to be excluded from the calculation of gross water use. Water delivered through the distribution system for agricultural use may be deducted from the calculation of gross water use. Under certain conditions, industrial process water use also may be deducted from gross water use.*

The calculated gross water use, based on recorded groundwater use and excluding recycled water use, for each year in the baseline period is shown in Table 7.

*Step 2* *Estimate service area population for each year in the baseline period using Methodology 2 in DWR's guidance document. To obtain an accurate estimate of GPCD, water suppliers must estimate population of the areas that they actually serve, which may or may not coincide with either their jurisdictional boundaries or with the boundaries of cities. According to Methodology 2, data published by the California Department of Finance (DOF) or the U.S. Census Bureau must serve as the foundational building block for population estimates. In some instances, data published by these two sources may be directly applicable. In other instances, additional refinements may be necessary. For example, to account for distribution areas that do not match District boundaries, customers with private sources of supply, or other unique local circumstances, water suppliers may have to supplement the above sources of data with additional local data sources such as county assessor data, building permits data, and traffic analysis zone data. These refinements are acceptable as long as they are consistently applied over time, and as long as they build upon population data sources of the DOF or the U.S Census Bureau.*

The District's service area population for each year in the baseline period was calculated using DOF data and census tract data. See Section 2 and Table 4 for population.

*Step 3* *Calculate daily per capita water use for each year in the baseline period. Divide gross water use (determined in Step 1) by service area population (determined in Step 2).*

The calculated daily per capita water use for the baseline period is shown in Table 17 and summarized in Table 18 for the 10 year range and Table 19 for the 5 year range.

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*Step 4* *Calculate Baseline Daily Per Capita Water Use. Calculate average per capita water use by summing the values calculated in Step 3 and dividing by the number of years in the baseline period. The result is Baseline Daily Per Capita Water Use for the selected baseline period.*

The average per capita water use calculated for a continuous 10-year baseline period (first baseline period) is shown on Table 18 with the highest value of 165 GPCD. The average per capita water use calculated for a continuous 5-year baseline period (first baseline period) is shown on Table 19, with the highest value of 161 GPCD.

The Baseline Daily Per Capita Water Use for the District was determined to be **165 GPCD**, based on the value calculated for a continuous 10-year baseline period.

All baseline targets were developed individually. Regional targets were considered but the nature of the District's system precluded the use of regional targets.

## 3.3 WATER DEMAND PROJECTIONS

### 3.3.1 10-YEAR PROJECTIONS

*Section 10631(k)*
*Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c) (10631(k)).*

Water demand projections for the next 10 years are governed by the baseline and targets described in the section above.

The Urban Water Use Target is determined using one of the following methods:

*Method 1:* *Eighty percent of the urban retail water supplier's Baseline Per Capita Daily Water Use.*

Using this method, the Urban Water Use Target for the District was calculated as **132 GPCD**, based on the District's Baseline Per Capita Daily Water Use of 165 GPCD.

*Method 2:* *Estimate using the sum of the specified three performance standards.*

Due to insufficient data, this method was not considered.

*Method 3: Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's 20x2020 Water Conservation Plan.*[2]

Based on the 20x2020 Water Conservation Plan, the District's service area lies in DWR Hydrologic Region 4 (South Coast), with an established Baseline Per Capita Daily Water Use of 180 GPCD and a Target Per Capita Daily Water Use of 149 GPCD. Using this method, the Urban Water Use Target for the District was calculated as **142 GPCD**.

Method 4: Due to insufficient data this method was not considered.

### 3.3.2 SELECTED METHOD

SGCWD's Urban Water Use Target was determined to be **142 GPCD** for 2020, based on Method 3 above.

A copy of water use projections for the next 20 years provided by SGCWD to the Upper District. SGCWD notified Upper District of the development of its 2010 UWMP and made a copy of its draft 2010 UWMP including its water use projections available to Upper District who in turn provided SGCWD with a copy of its draft 2010 UWMP, which is incorporated as a reference in this Plan.

### 3.3.3 MINIMUM WATER USE REDUCTION REQUIREMENT

The following calculation is made because the five-year Baseline Per Capita Water Use per CWC Section 10608.12(b)(3) is greater than 100 GPCD. The calculation is used to determine whether the water supplier's 2015 and 2020 per capita water use targets meet the legislation's minimum water use reduction requirement per CWC Section 10608.22. The calculation entails three steps:

*Step 1: Calculate Baseline Daily Per Capita Water Use using a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.*

This value was calculated as **161 GPCD** (see Table 19).

*Step 2: Multiply the result from Step 1 by 0.95. The 2020 per capita water use target cannot exceed this value (unless the water supplier's five-year Baseline Per Capita Water Use is 100 GPCD or less). If the 2020 target is greater than this value, reduce the target to this value.*

[2] California Department of Water Resources, State Water Resources Control Board, California Bay-Delta Authority, California Energy Commission, California Department of Public Health, California Public Utilities Commission, and California Air Resources Board. *20x2020 Water Conservation Plan*. February 2010.

This value was calculated as **153 GPCD**. SGCWD's 2020 Urban Water Use Target was determined using Method 3 above to be 142 GPCD, which is lower than the value calculated in this step. Therefore, no adjustment is needed for the City's 2020 Urban Water Use Target of 142 GPCD.

*Step 3: Set the 2015 target to mid-point between the 10- or 15-year Baseline Per Capita Water Use and the 2020 target determined in Step 2.*

SGCWD's 2015 Interim Urban Water Use Target is therefore set at **154 GPCD**, which is equivalent to half of the needed reduction in a gross based per capita by 2015.

Therefore, SGCWD's 2015 Interim Urban Water Use Target of 154 GPCD and 2020 Urban Water Use Target of 142 GPCD meet the legislation's minimum water use reduction requirement per CWC Section 10608.22.

### 3.3.4 COMPLIANCE DAILY PER CAPITA WATER USE

Compliance Daily Per Capita Water Use is defined as the Gross Water Use during the final year of the reporting period, and reported in GPCD. The Compliance Daily Per Capita Water Use will be reported in the City's 2015 Plan (interim compliance) and 2020 Plan (final compliance).

## 3.4 WATER USE REDUCTION PLAN

*10608.36.*

*Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.*

*10608.26*

*Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts.*

SGCWD is not an urban wholesale water supplier. Therefore, the requirement for an urban wholesale water supplier to provide an assessment of its present and proposed future measures, programs, and policies to help achieve the water use reductions required by the Water Conservation Bill of 2009 is not applicable to SGCWD.

As an urban retail water supplier, SGCWD's commodity water rate structure will assist SGCWD in implementing its water use reduction plan, to address the

requirements of the Water Conservation Bill of 2009. SGCWD may review its commodity water rate structure in the future, if necessary, to further promote water conservation. SGCWD will encourage its customers to participate in water conservation programs offered by USGVMWD. A potential economic impact from the water use reduction plan includes increased expense for SGCWD in promoting water conservation. The public hearing conducted by SGCWD to discuss the draft Plan included discussion of SGCWD's urban water use targets, the need for water conservation to meet those targets, and consideration of economic impacts.

## PROGRESS REPORT

SGCWD will report to the DWR on its progress in meeting its urban water use targets, using a standardized form to be developed by the DWR, when the form becomes available.

# SECTION 4

# SYSTEM SUPPLIES

## 4.1 WATER SOURCES

### 4.1.1 EXISITNG AND PLANNED SOURCES

*Section 10631(b)*
*Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

SGCWD depends on groundwater supplies as its existing and planned source of water supply. SGCWD has adjudicated water rights from Raymond Basin and Main Basin. In addition, untreated imported water is available from the Upper District to offset demands in excess of SGCWD's Main Basin water rights. Upper District is a wholesaler which supplies supplemental imported water from The Metropolitan Water District of Southern California (MWD) to its sub-agencies, including SGCWD. More information on SGCWD's groundwater rights and supplemental water is provided later in this Section.

SGCWD's water supply comes from the Main Basin. The historical groundwater supplies from the Main Basin and the Raymond Basin are shown on Table 20. Because SGCWD is located in an area that is built out, the projected water demand of 8,100 acre-feet for SGCWD is not expected to change significantly in the next 20 years other than measures taken to reduce demand.

SGCWD pumps groundwater from the Main Basin using five active wells. In addition SGCWD has one inactive well in the Raymond Basin. The groundwater pumped from these wells is stored in reservoir facilities in the Van Nuys Zone and Longden Zone (Plate 2) of SGCWD's service area. SGCWD's wells, shown on Plate 2, range in depth from 800 feet to 1,200 feet with maximum pumping capabilities ranging from 750 gallons per minute (gpm) to 2,600 gpm. The total capacity of SGCWD's wells is about 8,050 gpm.

#### 4.1.1.1 RAYMOND BASIN

SGCWD produces no groundwater from the Raymond Basin. The District does own an inactive well in the Raymond Basin. The location of this well is shown on Plate 2. SGCWD historical groundwater use in the Raymond Basin from 2000 through 2009 is shown in Table 20. The projected water demand by fiscal year 2029-30 will total about 8,000 acre-feet, as shown on Table 20.

#### 4.1.1.2 MAIN SAN GABRIEL BASIN

In the Main Basin, SGCWD produces groundwater through its five active wells. These wells are Wells No. 7, No. 9, No. 11, No. 12, and No. 14, as shown on Plate 2. SGCWD's historical production from the Main Basin, from 2000 through 2009 is shown on Table 21. Table 20 shows a summary of production, along with the projected water demand for 2010 through 2030.

Both groundwater basins (Main Basin and Raymond Basin) utilized by SGCWD have been adjudicated and are well-managed. In addition, the Department of Water Resources (DWR) Bulletin 118 does **not** identify the Main Basin or the Raymond Basin as being in overdraft.

Existing and planned sources of water available to the supplier are summarized in Table15. In addition, the current and projected whole sale supplies are shown in Table 15.

## 4.2 GROUNDWATER MANAGEMENT PLAN [SECTION 10631(b)]

*If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

1) *A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.*
2) *For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court of the board and a description of the amount of groundwater the urban water*

### 4.2.1 RAYMOND BASIN GROUNDWATER MANAGEMENT

Management of the water resources of the Raymond Basin is based on the Raymond Basin Judgment[1]. SGCWD was a defendant in the Raymond Basin Judgment.

#### 4.2.1.1 Raymond Basin Judgment

In 1937, the City of Pasadena filed suit to adjudicate water rights of the Raymond Basin. A copy of the Raymond Basin adjudication is located in Appendix D. The State of California Division of Water Resources (DWR) was retained to prepare a Report of Referee which described the geology and hydrogeology of the Raymond Basin and identified the Safe Yield of the Raymond Basin as 21,900 acre-feet. In 1950, the City of Pasadena requested the Safe Yield of the Raymond Basin to be re-determined. Subsequently, the Court issued a Modification of Judgment on April 29, 1955 increasing the Safe Yield of the Raymond Basin to 30,622 acre-feet. This is referred to as the "Decreed Right of 1955" and water rights for all parties are shown in

[1] City of Pasadena vs. City of Alhambra, et al, Los Angeles County Case No. Pasadena C-1323, Judgment entered December 23, 1944, modified April 29, 1955.

Appendix D. Due to the decrease in the groundwater elevations (see Appendix I), the Raymond Basin Management Board has phased in a 30 percent reduction, over five years, for all Decreed Rights in the Pasadena subarea from which SGCWD produces.

As a result of the Raymond Basin Judgment, participating Parties, including SGCWD, were allowed to exceed their water right by no more than 10 percent. (That exceedance is deducted from the following year's water right.) The water rights are fixed each year and do not vary. Water demands in excess of a party's water right must be met by purchasing imported water or using other water sources. The Raymond Basin Judgment is administered by the Raymond Basin Management Board.

SGCWD has a Decreed Right of 1,091 acre-feet of water per year from the Raymond Basin. However, as the result of the action previously taken by the Raymond Basin Management Board, that Decreed Right will be reduced to 763.7 acre-feet by fiscal year 2014-15.

### 4.2.2 GROUNDWATER MANAGEMENT IN THE MAIN SAN GABRIEL BASIN

Management of the water resources in the Main Basin is based upon Watermaster Services under two Court Judgments: San Gabriel River Watermaster (River Watermaster)[2] and Main San Gabriel Basin Watermaster (Main Basin Watermaster)[3]. SGCWD was a defendant in Long Beach Judgment and Main Basin Judgment and as such had participation. SGCWD also participates in the Main Basin management described in the Main Basin Watermaster document entitled "Five-Year Water Quality and Supply Plan". These three basin management documents are described in the following sections.

#### 4.2.2.1 Long Beach Judgment

On May 12, 1959, the Board of Water Commissioners of the City of Long Beach, Central Basin Municipal Water District (Central Basin Municipal), and the City of Compton, as plaintiffs, filed an action against the San Gabriel Valley Water Company and 24 other producers of groundwater from the San Gabriel Valley, including SGCWD, as a defendant. This action sought a determination of the rights of the defendants in and to the waters of the San Gabriel River system and to restrain the defendants from an alleged interference with the rights of plaintiffs and persons represented by the Central Basin Municipal in such waters. After six years of study and negotiation a Stipulation for Judgment was filed on February 10, 1965, and Judgment (Long Beach Judgment) was entered on September 24, 1965. Under the terms of the Long Beach Judgment, the water supply of the San Gabriel River system was divided at Whittier Narrows, the

[2] Board of Water Commissioners of the City of Long Beach, et al, v. San Gabriel Valley Water Company, et al, Los Angeles County Case No. 722647, Judgment entered September 24, 1965.

[3] Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al, Los Angeles County Case No. 924128, Judgment entered January 4, 1973.

boundary between San Gabriel Valley upstream and the coastal plain of Los Angeles County downstream. A copy of the Long Beach judgment is located in Appendix E.

Under the terms of the Long Beach Judgment, the area downstream from Whittier Narrows (Lower Area), the plaintiffs and those they represent, are to receive a quantity of usable water annually from the San Gabriel River system comprised of usable surface flow, subsurface flow at Whittier Narrows and water exported to the Lower Area. This annual entitlement is guaranteed by the area upstream of Whittier Narrows (Upper Area), the defendants, and provision is made for the supply of Make-up Water by the Upper Area for years in which the guaranteed entitlement is not received by the Lower Area.

Make-up water is imported water purchased by the Main San Gabriel Basin Watermaster (Main Basin Watermaster) and delivered to agencies in Central Basin Municipal to satisfy obligations under the Long Beach Judgment. The entitlement of the Lower Area varies annually, dependent upon the 10-year average annual rainfall in the Valley for the 10 years ending with the year for which entitlement is calculated.

The detailed operations described in the Long Beach Judgment are complex and require continuous compilation of data so that annual determinations can be made to assure compliance with the Long Beach Judgment. In order to do this, a three-member Watermaster was appointed by the Court, one representing the Upper Area parties, including SGCWD, nominated by and through Upper District, one representing the Lower Area parties nominated by and through Central Basin Municipal, and one jointly nominated by Upper District and Central Basin Municipal. This three-member board is known as the San Gabriel River Watermaster (River Watermaster).

The River Watermaster meets periodically during the year to adopt a budget, to review activities affecting water supply in the San Gabriel River system area, to compile and review data, to make its determinations of usable water received by the Lower Area, and to prepare its annual report to the Court and to the parties. The River Watermaster has rendered annual reports for the water years 1963-64 through 2008-09 and operations of the river system under Long Beach Judgment and through the administration by the River Watermaster have been very satisfactory since its inception.

One major result of the Long Beach Judgment was to leave the Main Basin free to manage its water resources as long as it meets its downstream obligation to the Lower Area under the terms of the Long Beach Judgment. SSWC, as a member of the Upper District intervened in the Long Beach case as a defendant in order to enforce the provisions of a Reimbursement Contract which was incorporated into the Long Beach Judgment to assure that any Make-up Water obligations under the terms of the Long Beach Judgment would be satisfied.

#### 4.2.2.2 Main Basin Judgment

The Upper Area then turned to the task of developing a water resources management plan to optimize the conservation of the natural water supplies of the area. Studies were made of various methods of management of the Main Basin as an adjudicated area and a report thereon was prepared for the Upper San Gabriel Valley Water Association, an association of water producers in the Main Basin, including SGCWD. After consideration by the Association membership, Upper District was requested to file as plaintiff, and did file, an action on January 2, 1968, seeking an adjudication of the water rights of the Main Basin and its relevant Watershed. In addition, SGCWD was included as a defendant. After several years of study (including verification of annual water production) and negotiations, a stipulation for entry of Judgment was approved by a majority of the parties, by both the number of parties and the quantity of rights to be adjudicated. Trial was held in late 1972 and Judgment (Main Basin Judgment) was entered on January 4, 1973. A copy of the Main Basin Judgment is located in Appendix F.

Under the terms of the Main Basin Judgment all rights to the diversion of surface water and production of groundwater within the Main Basin and its relevant Watershed were adjudicated. The Main Basin Judgment provides for the administration of the provisions of the Main Basin Judgment by a nine-member Watermaster. Six of those members are nominated by water producers (producer members) and three members (public members) are nominated by Upper District and the San Gabriel Valley Municipal Water District which overlie most of the Main Basin. The nine-member board employs a staff, an attorney and a consulting engineer. The Main Basin Watermaster holds public meetings on a regular monthly basis through the year. A copy of the Main San Gabriel Basin Watermaster's Rules and Regulations is located in Appendix G.

The Main Basin Judgment does not restrict the quantity of water which Parties may extract from the Main Basin. Rather, it provides a means for replacing with Supplemental Water all annual extractions in excess of a Party's annual right to extract water. The Main Basin Watermaster annually establishes an Operating Safe Yield for the Main Basin which is then used to allocate to each Party its portion of the Operating Safe Yield which can be produced free of a Replacement Water Assessment.

SGCWD's adjudicated right in the Main Basin is 5,395.80 acre-feet. If SGCWD extracts water in excess of its right under the annual Operating Safe Yield, it must pay an assessment for Replacement Water which is sufficient to purchase one acre-foot of Supplemental Water to be spread in the Main Basin for each acre-foot of excess production.

In addition to Replacement Water Assessments, the Main Basin Watermaster levies an Administration Assessment to fund the administration of the Main Basin management program under the Main Basin Judgment and a Make-up Obligation Assessment in order to fulfill the requirements for any Make-up Obligation under the Long Beach Judgment and to supply fifty percent of the administration costs

of the River Watermaster service. The Main Basin Watermaster levies an In-lieu Assessment and may levy special Administration Assessments.

Water rights under the Main Basin Judgment are transferable by lease or purchase as long as such transfers meet the requirements of the Main Basin Judgment. There is also provision for Cyclic Storage Agreements by which Parties and non-parties may store imported supplemental water in the Main Basin under such agreements with the Main Basin Watermaster pursuant to uniform rules and conditions and Court approval.

The Main Basin Judgment requires that the Main Basin Watermaster will not allow imported water to be spread in the main part of the Main Basin when the ground-water elevation at the Baldwin Park Key Well (Key Well) exceeds 250 feet; and that the Main Basin Watermaster will, insofar as practicable, spread imported water in the Main Basin to maintain the ground-water elevation at the Key Well above 200 feet. One of the principal reasons for the limitation on spreading imported water when the Key Well elevation exceeds 250 feet is to reserve ample storage space in the Main Basin to capture native surface water runoff when it occurs and to optimize the conservation of such local water. Under the terms of the Long Beach Judgment, any excess surface flows that pass through the Main Basin at Whittier Narrows to the Lower Area (which is then conserved in the Lower Area through percolation to groundwater storage) is credited to the Upper Area as Usable Surface Flow.

#### 4.2.2.3 Imported Water in the Main Basin

Through the Long Beach Judgment and the Main Basin Judgment, operations of the Main Basin are optimized to conserve local water to meet the needs of the parties of the Main Basin Judgment.

Typically, water producers within the Upper District rely upon groundwater from the Main Basin for their water supply. Imported water for groundwater replenishment is delivered to the flood control channels and diverted and spread at spreading grounds through Main Basin Watermaster's agreement with the Los Angeles County Department of Public Works (DPW). Groundwater replenishment, utilizing imported water, is Replacement Water under the terms of the Main Basin Judgment. It can be stored in the Main Basin through Cyclic Storage agreements, authorized by terms of the Main Basin Judgment, but such stored water may be used only to supply Supplemental Water to the Main Basin Watermaster.

The Main Basin Watermaster has entered into a Cyclic Storage Agreement with each of the three municipal water districts. One is with the MWD and the Upper District, which permits MWD to deliver and store imported water in the Main Basin in an amount not to exceed 100,000 acre-feet for future Replacement Water use. The second Cyclic Storage Agreement is with Three Valleys Municipal Water District and permits MWD to deliver and store 40,000 acre-feet for future Replacement Water use. The third is with San Gabriel Valley Municipal Water District and contains generally the same conditions as the agreement with MWD except that the stored

quantity is not to exceed 40,000 acre-feet. In addition, SGCWD has a Cyclic Storage account and is allowed to store a maximum of 3,000.00 acre-feet at any given time. As of September 30, 2010, SGCWD had about 350 acre-feet in its Cyclic Storage account.

Imported Make-up Water is often delivered to lined stream channels and conveyed to the Lower Area. Make-up Water is required to be delivered to the Lower Area by the Upper Area when the Lower Area entitlement under the Long Beach Judgment exceeds the usable water received by the Lower Area. Imported water is used to fulfill the Make-up Water Obligation when the amount of Make-up Water cannot be fulfilled by reimbursing the Lower Area interests for their purchase of recycled water. The amount of recycled water for which reimbursement may be made as a delivery of Make-up Water is limited by the terms of the Long Beach Judgment to the annual deficiency in Lower Area Entitlement water or to 14,735 acre-feet, whichever is the lesser quantity.

#### 4.2.2.4 Five-Year Water Quality and Supply Plan

The Main Basin Watermaster was created in 1973 to resolve water issues that had arisen among water users in the San Gabriel Valley. Watermaster's mission was to generally manage the water supply of the Main Basin. During the last 1970s and early 1980s, significant groundwater contamination was discovered in the Main Basin. The contamination was caused in part by past practices of local industries that had carelessly disposed of industrial solvents, referred to as Volatile Organic Compounds (VOCs), as well as by agricultural operations that infiltrated nitrates into the groundwater. Cleanup efforts were undertaken at the local, state, and federal level.

By 1989, local water agencies, including SGCWD, adopted a joint resolution regarding water quality issues that stated that Main Basin Watermaster should coordinate local activities aimed at preserving and restoring the quality of groundwater in the Main Basin. The joint resolution also called for a cleanup plan. In 1991, the Court granted Main Basin Watermaster the authority to control pumping for water quality purposes. Accordingly, Main Basin Watermaster added Section 28 to its Rules and Regulations regarding water quality management. The new responsibilities included development of a Five-Year Water Quality and Supply Plan, updating it annually, submitting it to the California Regional Water Quality Control Board, Los Angeles Region, and making it available for public review by November 1 of each year. A copy of the most recent "Five-Year Water Quality and Supply Plan" is located in Appendix H.

The Main Basin Watermaster prepares and annually updates the Five-Year Water Quality and Supply Plan in accordance with the requirements of Section 28 of its Rules and Regulations. The objective is to coordinate groundwater-related activities so that both water supply and water quality in the Main Basin are protected and improved. Many important issues are detailed in the Five-Year Plan, including how the Main Basin Watermaster plans to:

1. Monitor groundwater supply and quality;
2. Develop projections of future groundwater supply and quality;
3. Review and cooperate on cleanup projects, and provide technical assistance to other agencies;
4. Assure that pumping does not lead to further degradation of water quality in the Main Basin;
5. Address Perchlorate, N-nitrosodimethylamine (NDMA), and other emerging contaminants in the Main Basin;
6. Develop a cleanup and water supply program consistent with the U.S. Environmental Protection Agency (USEPA) plans for its San Gabriel Basin Superfund sites; and
7. Coordinate and manage the design, permitting, construction, and performance evaluation of the Baldwin Park Operable Unit (BPOU) cleanup and water supply plan.

The Main Basin Watermaster, in coordination with the Upper District, has worked with state and federal regulators, along with local water companies to clean up water supplies. Section 28 of the Main Basin Watermaster's Rules and Regulations require all producers (including SSWC) to submit an application to 1) construct a new well, 2) modify an existing well, 3) destroy a well, or 4) construct a treatment facility. Main Basin Watermaster prepares a report on the implications of the proposed activity. As a party to the Main Basin Judgment, SSWC reviews a copy of these reports and is provided the opportunity to submit comments on the proposed activity before Main Basin Watermaster Board takes its final action.

## 4.3 DESCRIPTION OF GROUNDWATER BASINS [SECTION 10630 (b)]

*2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

### 4.3.1 RAYMOND BASIN

#### 4.3.1.1 BACKGROUND

The Raymond Basin is located in Los Angeles County about 10 miles north-easterly of downtown Los Angeles. Raymond Basin is a wedge in the northwesterly portion of the San Gabriel Valley and is bounded on the north by the San Gabriel Mountains, on the west by the San Rafael Hills and is separated from the Main San Gabriel Basin on the southeast by the Raymond Fault. The Raymond Basin is divided into an eastern unit, which is the Santa Anita sub-area, and the Western unit which is the Pasadena sub-area and the Monk Hill Basin. The location of the Raymond Basin and the subareas, as shown on Plate 3, the surface area of Raymond Basin is about 40.9 square miles. SGCWD produces water from the Pasadena subarea.

The principal streams in the Raymond Basin are the Arroyo Seco, Eaton Wash and Santa Anita Wash. The Arroyo Seco drains to the Los Angeles River, while

Eaton Wash and Santa Anita Wash drain to the Rio Hondo, a distributary of the San Gabriel River.

#### 4.3.1.2 GEOLOGY

The geology of the Raymond Basin is described in details in the "Report of Referee" prepared in 1943 by the State of California Division of Water Resources and is summarized below.

The Raymond Basin is roughly triangular in shape. Its northern boundary, about twelve miles in length, is formed by a portion of the southerly front of the San Gabriel Mountains. The western boundary of the Raymond Basin is about eight miles long and is also composed chiefly of the same Basement Complex rocks which form the mountains and which are continuous at depth, together with a small area of marine Tertiary sediment at the southern end. Raymond Fault, the southern boundary of the triangle, crosses the Valley floor for a distance of about nine miles, connecting a granitic spur from the mountains at the eastern end of the Raymond Basin with Tertiary sediments outcropping in its southwestern corner.

The Raymond Fault separates Raymond Basin from the Main Basin. The fault zone is not impervious and groundwater can flow across this boundary into the Main Basin. The source of natural groundwater supply to the Raymond Basin is direct rainfall, percolation from surface runoff from the northern and western sides, and presumably some underground percolation of water from the mountain mass to the alluvium.

#### 4.3.1.3 HYDROGEOLOGY

DWR describes the hydrogeology of the Raymond Basin in its Bulletin 118. According to the report, the water-bearing materials of the Raymond Basin are dominated by unconsolidated Quaternary alluvial gravel, sand, and silt deposited by streams flowing out of the San Gabriel Mountains. Younger alluvium typically follows active streambeds and reaches a maximum thickness of about 150 feet. Older alluvium generally thickens southward from the mountain front, reaching a maximum of about 1,140 feet near Pasadena, then thins to about 200 feet near the Raymond Fault. However, confined groundwater conditions have existed locally in the Raymond Basin, particularly along the Raymond Fault near Raymond Hill where layers of finer grained sediments become more abundant.

The Raymond Fault trends east-northeast and acts as a groundwater barrier along the southern boundary of the Raymond Basin. This fault acts as a complete barrier along its western end and becomes a less effective barrier eastward. East of Santa Anita Wash, this fault ceases to be an effective barrier and the flow of groundwater southward into the Main Basin becomes essentially unrestricted. A north-trending divide paralleling the Eaton Wash separates both surface and subsurface water flow in the eastern portion of the Raymond Basin. The water level is higher on the eastern side of this divide, ranging from 300 feet higher in the north to about 50 feet higher in the south. Monk Hill, an emergent mound of consolidated bedrock within the

Raymond Basin, causes groundwater to flow around it, but does not appreciably change the regional flow pattern. Groundwater contour maps for the Raymond Basin (prepared for the Raymond Basin Annual Report) are included in Appendix I.

Natural recharge to the Raymond Basin is mainly from direct percolation of precipitation and percolation of ephemeral stream flow from the San Gabriel Mountains in the north. The principal streams bringing surface inflow are the Arroyo Seco, Eaton Creek and Santa Anita Creek. Some stream runoff is diverted into spreading grounds and some is impounded behind small dams allowing the water to infiltrate and contribute to groundwater recharge of the Raymond Basin. An unknown amount of underflow enters the Raymond Basin from the San Gabriel Mountains through fracture systems.

Water levels in the Raymond Basin have varied through time but generally have decreased over time in the Pasadena subarea, as shown in Appendix I.

No estimates of available groundwater storage have been made recently in the Raymond Basin. DWR (1971) study estimated the available stored water to be 1,000,000 acre-feet in 1970, leaving about 450,000 acre-feet of storage space available.

### 4.3.2 MAIN SAN GABRIEL BASIN

#### 4.3.2.1 BACKGROUND

The San Gabriel Valley is located in southeastern Los Angeles County and is bounded on the north by the San Gabriel Mountains; on the west by the San Rafael and Merced Hills, on the south by the Puente Hills and the San Jose Hills, and on the east by a low divide between the San Gabriel River system and the Upper Santa Ana River system, as shown on Plate 4.

The San Gabriel River and its distributary, the Rio Hondo, drain an area of about 490 square miles upstream of Whittier Narrows. Whittier Narrows is a low gap between the Merced and Puente Hills, just northwest of the City of Whittier, through which the San Gabriel River and the Rio Hondo flow to the coastal plan of Los Angeles County. Whittier Narrows is a natural topographic divide and a subsurface restriction to the movement of groundwater between the Main San Gabriel Basin and the Coastal Plain. Of the approximately 490 square miles of drainage area upstream of Whittier Narrows, about 167 square miles are valley lands, and about 323 square miles are mountains and foothills.

The Main Basin includes essentially all of the valley floor of San Gabriel Valley with the exception of the Raymond Basin and Puente Basin. The boundaries of the Main Basin are the Raymond Basin on the northwest, the base of the San Gabriel Mountains on the north, the groundwater divide between San Dimas and La Verne and the lower boundary of the Puente Basin on the east, and the common boundaries between Upper District and Central Basin Municipal through Whittier Narrows on the

southwest. The common water supply of the Main Basin does not include the Raymond Basin, the area northerly of Raymond Hill Fault, which was adjudicated in the Pasadena v. Alhambra case, described above. The Puente Basin, although tributary to the Main Basin, is not included in the Main Basin administered by the Main Basin Watermaster.

The Main Basin is a large groundwater basin replenished by stream runoff from the adjacent mountains and hills, by rainfall directly on the surface of the Valley floor, subsurface inflow from the Raymond Basin and Puente Basin, and by return flow from water applied for overlying uses. Additionally, the Main Basin is replenished with imported water. The Main Basin serves as a natural storage reservoir, transmission system and filtering medium for wells constructed therein.

Urbanization of the San Gabriel Valley began in the early part of the twentieth century, but until the 1940's, agricultural land use occupied more area than residential and commercial land use. After World War II agricultural areas reduced rapidly and are now less than two thousand acres. The agricultural areas tend to be located in the easterly portion of the Main Basin and along power transmission rights of way adjacent to the San Gabriel River. Agricultural plots are discontinuous and relatively small. There are several major industrial areas adjacent to the San Gabriel River and within other portions of the Valley. The greatest area of land use in the Valley is for residential and commercial purposes.

#### 4.3.2.2 Geology

The Main Basin consists of a roughly bowl-shaped depression in the bedrock, filled over millions of years with alluvial deposits. This bowl-shaped depression is relatively deep; the elevation of the base of the groundwater reservoir declines from about 800 feet above mean sea level (MSL) in the vicinity of San Dimas at the northeast corner of the Main Basin to about 2,200 feet below MSL in the vicinity of South El Monte *(California Department of Water Resources, 1966)*.

Most of the alluvium deposited within this depression is debris from the San Gabriel Mountains, washed and blown from the side of the mountains over time. This process has also resulted in the materials within the Main Basin varying in size from relatively coarse gravel nearer the mountains to fine and medium-grained sand containing silt and clay as the distance from the mountains increases. The principal water-bearing formations of the Main Basin are unconsolidated and semi-consolidated sediments which vary in size from coarse gravel to fine-grained sands. The interstices between these alluvial particles throughout the Main Basin fill with water and transmit water readily to wells. The thickness of the water-bearing materials in the Main Basin ranges from 200 to 300 feet in the northeastern portion of the Main Basin near the mountains to nearly 4,000 feet in the South El Monte area *(California Department of Water Resources, 1966)*.

The soils overlying the Main Basin average about six feet in depth. Soil depths are generally greater at the perimeter of the Valley and decrease toward the center along the San Gabriel River. These soils are residual, formed in place through

chemical, mechanical and plant weathering processes. The infiltration rates of these soils are greater along the natural channels and their adjacent flood plains. Lower infiltration rates are found in the perimeter areas of the Valley. Since the Valley is mostly urbanized, a significant portion of its area has been paved and many miles of stream channel have been lined for flood control purposes, thus decreasing infiltration of water through streambeds. More detailed Main Basin geology is discussed in the report entitled "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geohydrology" (*California Department of Water Resources, 1966*).

#### 4.3.2.3. Hydrogeology

The total fresh water storage capacity of the Main Basin is estimated to be about 9.5 million acre-feet. Of that, about 1,000,000 acre-feet has been used historically in Main Basin operations. The change in groundwater elevation at the Baldwin Park Key Well (Key Well) is representative of changes in groundwater in the Main Basin. One foot of elevation change at the Key Well is roughly the equivalent of about 8,000 acre-feet of water storage. The location of the Key Well is shown on Plate 4 and hydrograph of the Key Well is shown on Plate 5. The historic high groundwater elevation was recorded at over 329.1 feet in April 1916, at which time Main Basin storage was estimated to be about 8,700,000 acre-feet. The historic low was recorded in December 2009 at 189.2 feet, at which time Main Basin storage was estimated to be about 7,600,000 acre-feet. The Key Well hydrograph shown on Plate 5 illustrates the cyclic nature of Main Basin recharge and depletion. The hydrograph also illustrates the dramatic recharge capability of the Main Basin during wet periods.

Generally, water movement in the Main Basin is from the San Gabriel Mountains on the north to Whittier Narrows to the southwest. The most recent groundwater contour map is shown on Plate 6. Groundwater movement in the northern and northeastern regions of the Main Basin is affected by faulting. The Raymond Fault located in the north westerly portion of the Main Basin separates the Raymond Basin from the Main Basin, for example.

The Main Basin is an unconfined aquifer. Although clay deposits appear mixed with the soils in several locations in the Main Basin and there are various clay lenses throughout the Main Basin, they do not coalesce to form a single impermeable barrier to the movement of subsurface water. The Main Basin therefore operates as a single, unconfined aquifer. As previously mentioned, a thorough discussion of Main Basin hydrogeology is contained in the report "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geohydrology" (*California Department of Water Resources, 1966*).

Within the Main Basin there are a number of identified sub-basins. These include the Upper San Gabriel Canyon Basin, Lower San Gabriel Canyon Basin, Glendora Basin, Foothill Basin, Way Hill Basin and San Dimas Basin. In addition, the Puente Basin is tributary to the Main Basin from the southeast, between the San Jose and Puente Hills. Plate 7 shows the location of the sub-basins within the Main Basin.

#### 4.3.2.4 Hydrology

The major sources of recharge to the Main Basin are direct penetration of rainfall on the Valley floor, percolation of runoff from the mountains, percolation of imported water and return flow from applied water. Table 2 shows historic annual rainfall in the San Gabriel Valley. Rainfall occurs predominantly in the winter months and is more intense at higher elevations and closer to the San Gabriel Mountains. Rainfall is also highly variable from year to year, as shown on Table 2. In water year 2006-07 the total rainfall (four station average) was less than five inches, while in 2004-05 the total rainfall (four station average) was nearly 46 inches.

The magnitude of annual recharge from direct penetration of local rainfall and return flow from applied water is not easily quantifiable. Percolation of runoff from the mountains and valley floor along with percolation of imported water has been estimated by River Watermaster. The DPW maintains records on the amount of local and imported water conserved in water spreading facilities and stream channels.

The Main Basin is bisected by the San Gabriel River. The San Gabriel River originates at the confluence of its west and east forks in the San Gabriel Mountains. It flows through the San Gabriel Canyon and enters the Main Basin at the mouth of the canyon north of the City of Azusa (see Plate 4). The San Gabriel River flows southwesterly across the Valley to Whittier Narrows, a distance of about 15 miles. It exits the Valley at Whittier Narrows, and transverses the Coastal Plan in a southerly direction to reach the Pacific Ocean at Alamitos Bay near the City of Long Beach.

The San Gabriel River is joined and fed by tributary creeks and washes. In the Main Basin these include: Big Dalton Wash, which originates in the San Gabriel Mountains; Walnut Creek, which originates at the northeast end of the San Jose Hills; and San Jose Creek, which originates in the San Gabriel Mountains, but which travels around the southerly side of the San Jose Hills through the Puente Narrows before joining the San Gabriel River just above Whittier Narrows.

The channel of the San Gabriel River bifurcates in the upper middle portion of the Main Basin, forming a channel to the west of and parallel to the San Gabriel River, known as the Rio Hondo. The Rio Hondo is fed by tributaries draining the westerly portion of the Main Basin, including Sawpit Wash, Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash, all of which originate in the San Gabriel Mountains or the foothills. The Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash all cross the Raymond Basin area before entering the Main Basin. The channel of the Rio Hondo passes through Whittier Narrows westerly of the San Gabriel River, and then flows southwesterly to join the Los Angeles River on the Coastal Plain.

To protect residents of the San Gabriel Valley from flooding that can result during periods of intensive rainfall, the DPW and the U.S. Army Corps of Engineers (Corps of Engineers) have constructed an extensive system of dams, debris basins, reservoirs and flood control channels. The dams and reservoirs also operate as water

conservation facilities. The dams and reservoirs that control the flow of the San Gabriel River and the Rio Hondo include: Cogswell Reservoir on the west fork of the San Gabriel River, San Gabriel Reservoir at the confluence of the west and east forks of the San Gabriel River, Morris Reservoir near the mouth of the San Gabriel Canyon, Santa Fe Reservoir in the northerly portion of the Basin and Whittier Narrows Reservoir at the southwestern end of the Valley.

Many of the stream channels tributary to the San Gabriel River have been improved with concrete banks (walls) and concrete-lined bottoms. These stream channel improvements have significantly reduced the area of previous stream channels and reduced Main Basin recharge. A number of off-stream groundwater replenishment facilities have been established along these stream channels to offset such reductions in recharge. The locations of these water spreading facilities are shown on Plate 4. Some of these facilities are accessible to imported water supplies, while some facilities receive only local runoff.

The paths of the surface streams are mirrored in the soils and in the direction of groundwater movement in the Main Basin. The tributary creeks and washes, carrying smaller amounts of water, generally flow toward the center of the Valley, while the direction of flow of the major streams, the San Gabriel River and the Rio Hondo, is from the mountains in the north to Whittier Narrows in the southwest. In similar fashion, the primary direction of groundwater movement in the Main Basin is from the north to the southwest, with contributing movement generally from the east and west toward the center of the Main Basin as shown on Plate 6. The greatest infiltration and transmissivity rates of soils in the Main Basin are from north to south, with the maximum rates found in the center of the Valley along the stream channels. Generally, the Main Basin directs groundwater to the southwest through Whittier Narrows.

## 4.4 PAST AND PROJECTED LOCATION, AMOUNT AND SUFFICIENCY OF GROUNDWATER [SECTION 10631 (b)]

*(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

*(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

### 4.4.1 GROUNDWATER SOURCES IN RAYMOND BASIN

SGCWD currently does not produce groundwater from the Pasadena Subarea of the Raymond Basin. According to the Raymond Basin Judgment, SGCWD could produce up to 1,091 acre-feet each year from the Raymond Basin, but that amount will be gradually reduced to 763.7 acre-feet by fiscal year 2014-15.

As discussed in Section 3.2.1, the Raymond Basin has been adjudicated and is managed. Water levels in Pasadena Subarea have generally decreased, resulting in the reduction of Decreed Rights. Raymond Basin is a well managed basin and should have sufficient groundwater supply over the next 20 years under single and multiple droughts.

### 4.4.2 GROUNDWATER SOURCES IN MAIN SAN GABRIEL BASIN

SGCWD produces groundwater through its active wells in the Main Basin. The groundwater supply from the Main Basin is pumped to reservoir storage facilities and then delivered to SGCWD's customers.

As noted in Section 4.2, the Main Basin is managed by the Main Basin Watermaster. Section 42 of the Main Basin Judgment (Basin Operating Criteria) states in part "*…Watermaster shall not spread Replacement Water when the water level at the Key Well exceeds Elevation two hundred fifty (250), and Watermaster shall spread Replacement Water, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200).*" Plate 5 shows the historic fluctuation of the Key Well since the Main Basin was adjudicated in 1973 and demonstrates that the Main Basin was generally operated between elevation 250 feet and 200 feet above msl. Furthermore, at elevation 200 feet msl at the Key Well, the Main Basin has about 7,600,000 acre-feet of available storage. During the period of management under the Main Basin Judgment, significant drought events have occurred from 1969 to 1977, 1983 to 1991, 1998 to 2004, and 2006 to present. In each drought cycle the Main Basin was managed to maintain its water levels and SGCWD was able to meet its demands, as shown in Table 7. **Therefore, based on historic management practices, SGCWD will have adequate groundwater supply from the Main Basin over the next 20 years under single and multiple droughts.**

### 4.4.3 PROJECTED GROUNDWATER SUPPLY

SGCWD does not expect any population growth within its service area, as discussed in Chapter 2. Therefore, SGCWD's water demands will not change significantly within the next 20 years. As shown on Table 7, the maximum groundwater production for the last five years was 7,672 acre-feet. The projected amount of groundwater to be pumped over the next 20 years is not expected to exceed 7,973 acre-feet per year (Table 7). As noted earlier, the Raymond Basin and Main Basin are managed to maintain adequate future supplies.

## 4.5 RELIABILITY OF WATER SUPPLY TO CLIMATE [SECTION 10631 (C) (1)-(3)]

*Section 10631*

*c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:*

*1) An average water year.*

*2) A single dry water year.*

*3) Multiple dry water years.*
*For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

SGCWD produces water from the Main Basin. As a result of the Raymond Basin and the Main Basin management, SGCWD has not experienced water supply deficiencies. The Management of both basins is based on their adjudications, which are described in Section 4.2. Information regarding the reliability of the groundwater supplies for SGCWD is based on the 51-year annual rainfall data within the San Gabriel Valley (Table 2). Table 2 summarizes the rainfall within San Gabriel Valley from 1958-59 through 2008-09. According to the rainfall data on Table 2, the 51-year average rainfall within SGCWD's service area is about 17.8 inches. Therefore, fiscal year 2005-06 represents an average water year for SGCWD in which the total amount of rainfall was about 16.8 inches. A single dry year for SGCWD was experienced in 2006-07 in which the total amount of rainfall was about 4.9 inches. A multiple dry year sequence for SGCWD is represented from fiscal year 2006-07 to fiscal year 2008-09. During those years, the total amount of rainfall was about 4.9, 16.4, and 14.0 inches respectively.

## 4.6 TRANSFER OPPORTUNITIES

*Section 10631(d)*
*Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis .*

SGCWD has established a long-term reliable supply from the Main Basin. There are no other planned water supply sources now or in the future. In addition to its existing reliable supply, SGCWD has interconnections with California American Water Company and City of Alhambra. SGCWD is built out and there are no plans to expand the water supply.

### 4.6.1 RAYMOND BASIN SHORT-TERM OPPORTUNITIES

There are no known opportunities for exchanges or transfers of water on a short-term basis or a long-term basis.

### 4.6.2 MAIN BASIN SHORT-TERM OPPORTUNITIES

As discussed in Section 4.2.2.3, there is a provision for Cyclic Storage Agreements by which SGCWD may store imported supplemental water in the Main Basin. SGCWD has a Cyclic Storage account and is allowed to store a maximum of 2,000 acre-feet at any given time. As of September 30, 2010 SGCWD had about 350 acre-feet in its Cyclic Storage account.

## 4.7 DESALINATED WATER OPPORTUNITIES

*Section 10631(i)*
*Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

SGCWD does not have opportunities to incorporate desalinated water into its water supply. Groundwater produced from the Main Basin is low in Total Dissolved Solids (TDS) and does not require desalination. The average TDS value for the SGCWD Main Basin wells is about 240 milligrams per liter (mg/l). The California Department of Health Services (CDPH) recommended level for TDS is 500 mg/l and water for long term domestic use can have TDS concentrations up to 1,000 mg/l. Therefore, SGCWD does not have the need to desalinate water at this time.

## 4.8 RECYCLED WATER OPPORTUNITIES

### 4.8.1 RECYCLED WATER AND POTENTIAL FOR USE

*Section 10633*
*The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:*

SGCWD does not have access to recycled water due to the lack of infrastructure to convey recycled water to SGCWD. SGCWD would have to construct transmission and distribution facilities to deliver recycled water to customers within its service area.

### 4.8.2 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

*Section 10633*
*(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*
*(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.*

There are two water reclamation plants in the Basin; the Whittier Narrows Water Reclamation Plant (WNWRP) and the San Jose Creek Water Reclamation Plan (SJCWRP). The Los Angeles County Sanitation Districts (LACSD) operates both of these facilities. The method of disposal when treated recycled water is not used (non-recycled) is discharge to the San Gabriel River/Rio Hondo and eventually flows to the ocean.

The WNWRP, which began operation in 1962, was the first reclamation plant built by LACSD. It has a treatment capacity of about 15 MGD and provides coagulated, filtered and disinfected tertiary effluent. The WNWRP serves a population

of approximately 150,000 people. The WNWRP produced 6.04 MGD (6,769 acre-feet per year) of coagulated, filtered, disinfected tertiary recycled water in fiscal year 2008-09. An average of 5.901 MGD (6,613 acre-feet per year), or 97.7 percent of the recycled water produced during fiscal year 2008-09 at the WNWRP was re-used for landscape/plant irrigation and groundwater replenishment. The method of disposal when treated recycled water is not used (non-recycled) is discharge to the San Gabriel River and eventually flows to the ocean.

The SJCWRP, which began operation in 1971, currently has a treatment capacity of about 100 MGD. The treatment level is coagulation, filtration and disinfection tertiary effluent. The SJCWRP has room for an expansion of an additional 25 MGD, although there is no schedule for such an expansion. The SJCWRP plant serves a population of approximately 1 million people, largely a residential population. The SJWRP produced 71.05 MGD (79,615 acre-feet per year) of coagulated, filtered, disinfected tertiary recycled water in fiscal year 2008-09. An average of 26.23 MGD (29,392 acre-feet per year), or 36.9 percent of the recycled water produced during fiscal year 2008-09 at the SJCWRP was re-used for landscape irrigation, agricultural irrigation, industrial use, impoundment, and groundwater replenishment. The method of disposal when treated recycled water is not used (non-recycled) is discharge to the San Gabriel River and eventually flows to the ocean.

### 4.8.3 CURRENT RECYCLED WATER USE

*Section 10633*

*(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use*

SGCWD currently does not have any recycled water use within its service area. Therefore, this requirement is currently not applicable to SGCWD.

### 4.8.4 POTENTIAL USES OF RECYCLED WATER

*Section 10633*

*(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

Potential recycled water customers within SGCWD based on recycled water use for large-volume irrigation purposes (e.g. municipal parks, fields, golf courses, etc.) are shown on Table 21. Although recycled water supplies are not available at this time, SGCWD has identified potential demands totaling about 87 acre-feet.

### 4.8.5 PROJECTED RECYCLED WATER USE

*Section 10633*

*(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15 and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision*

SGCWD has identified potential recycled water customers (e.g. municipal parks, fields, golf courses, etc.). Recycled water use factors were applied to overall water demands for these customers to determine the potential recycled water demands. Although a schedule for recycled water use has not been identified, a potential recycled water system could provide recycled water to 14 potential customers with a total annual recycled water demand of approximately 87 acre-feet per year as shown on Table 21. No recycled water use is anticipated to occur prior to fiscal year 2029-30.

### 4.8.6 ENCOURAGING USE OF RECYCLED WATER

*Section 10633*

*(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*

SGCWD's services area is not in close geographical proximity to a recycled water source. However, potential future funding for construction, operation, maintenance, and replacement of facilities recycled water distribution system may be obtained from federal, state, and local sources.

### 4.8.7 PLAN FOR OPTIMIZING USE OF RECYCLED WATER

*Section 10633*

*(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*

SGCWD has identified potential recycled water customers within the City (e.g. municipal parks, fields, golf courses, etc.) and a proposed recycled distribution water pipeline route was based on maximizing recycled water demands and minimizing pipeline and infrastructure costs. The Study also identified recycled water facilities, including recycled water distribution pipelines, booster pumps, reservoirs, and backflow prevention assemblies, and identified potential funding sources for these facilities. Although a proposed recycled water project is not projected to change any land use or planning designations of the proposed recycled customers, implementation of the proposed facilities may cause temporary and/or permanent changes to the physical environment during construction. However, the Study indicates mitigation measures are available for any potential air quality, water quality, hydrology, soils, traffic, land use, and aesthetics impacts from implementation of the proposed facilities.

LACSD's WNWRP is the likely source of recycled water. The WNWRP currently supplies recycled water to Upper District's Phase IIA recycled water system. Upper District has recently completed construction of its Phase IIA recycled water system expansion into the City of Rosemead. Upper District will continue to study future recycled water expansion projects, including recycled water deliveries to SGCWD.

## 4.9 FUTURE PROJECTS

*Section 10631(h)*
*(Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program (10631(h)).*

At this time there are no planned projects to increase the water supply for SGCWD. SGCWD has established a long-term reliable supply from the Main Basin. There are no other planned water supply sources now or in the future. In addition to its existing reliable supply, SGCWD has interconnections with adjacent water agencies.

# SECTION 5

# WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING

## 5.1 WATER SUPPLY RELIABILITY

### 5.1.1 TOOLS TO MAXIMIZE RESOURCES

*Section 10620(f)*
*An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

The primary water management tools and options available to SGCWD are the Demand Management Measures implemented by Upper District. The water distribution system contains a number of redundancies which are designed to reduce the potential for impacts.

### 5.1.2 ALTERNATE SOURCES

*Section 10631(c)(2)*
*For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

As previously discussed in Section 2, SGCWD's supply is highly reliable.

## 5.2 WATER SHORTAGE CONTINGENCY PLANNING

### 5.2.1 CATASTROPHIC INTERRUPTION PLAN

*Section 10632©*
*Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.*

SGCWD prepared a Emergency Response Plan (ERP), which describes the actions that SGCWD will take during a catastrophic interruption of water supplies including, a regional power outage, reservoir failures, water contamination threat, Supervisory Control and Data Acquisition (SCADA) system failure, and major water main breaks.

SGCWD's office and field personnel have had ERP training and are aware of their duties and responsibilities in the event of an emergency. In addition, emergency training is conducted every year. The office and field personnel also perform workshops, mock exercises, and group discussions on a regular basis that demonstrate the entire system's operation and steps that would be required in various types of emergencies

that can occur. SGCWD's operation managers are also trained in the Standard Emergency Management System (SEMS) to coordinate with the local water agencies, fire and police departments, as well as with surrounding agencies in the event of any major disaster.

In the event of system failure, SGCWD has two emergency water interconnections within the SGCWD's system. One is with California American Water Company and the other is with the City of Alhambra. These interconnections are manually activated and can supply water between each water supplier in the event that one or the other water agency may need additional water due to a power failure or other disaster.

In the event of a major power outage, SGCWD two emergency power sources for Wells No. 11 and No. 12. In addition, SGCWD has three reservoirs that can provide water storage for more than 10 million gallons. The total capacity of the Van Nuys Reservoirand the Longden No. 2, and No. 3 allow SGCWD to potentially provide the average day demand of 3,000 gpm for more than two days.

### 5.2.2 PROHIBITIONS DURING SHORTAGES

*Section 10632(d)*
*Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.*

The District water shortage contingency plan contains a number of provisions. This plan is attached in Appendix K. The key points of the plan are summarized in Table 22.

### 5.2.3 CONSUMPTION LIMITS DURING SHORTAGES

*Section 10632(e)*
*Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*

The District water shortage contingency plan contains consumption limits for the various stages of the drought. The plan is attached in Appendix K. The consumption reductions are summarized in Table 23.

### 5.2.4 PENALTIES DURING SHORTAGES

*Section 10632(f)*
*Penalties or charges for excessive use, where applicable.*

The District water shortage contingency plan contains penalties for over consumption during periods of mandatory consumptions limits. The plan is attached in Appendix K. The penalties for over use during shortages are summarized in Table 34.

### 5.2.5 STAGES OF ACTION DURING WATER SUPPLY SHORTAGES

SGCWD has no set triggers for implementing the stages of water shortage plan. The triggers for the implementation of the Conservation Plan in SGCWD dependent upon the action of the Watermaster services and indirectly, Metropolitan Water District of Southern California. It may be established by the Board of Directors which Phase will best accomplish the required reduction in water use. Public hearings will be held at the time of the initiation of each phase, so that the public may continue to be informed of the status of the Conservation Plan.

SGCWD depends on groundwater for its current and future supplies. SGCWD's water supply comes from the Main Basin which is carefully managed by the Main Basin Watermaster, as discussed in Section 3. Drought events have occurred from 1969 to 1977, 1983 to 1991, 1998 to 2004 and 2006 to present. In each drought cycle, water levels in the Main Basin and Raymond Basin were maintained and sufficient water supply was available for the retail water agencies. As shown on Table 25, multiple dry years did not increase SGCWD's water demands, nor compromise SGCWD's ability to reliably supply water to its customers.

Based on historical management practices and no projected increased water demands, there will be no water shortages in the Main Basin or Raymond Basin. SGCWD will have adequate groundwater supplies under single and multiple year drought events.

### 5.2.6 FINANCIAL IMPACTS OF SHORTAGES

*Section 10632(g)*
*An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.*

SGCWD does not expect any water shortages in the next 20 years. However, if SGCWD hypothetically receives up to a 50 percent reduction in water supplies, SGCWD's water rate structure is designed to provide adequate reserves to allow operation of the system during periods of low consumption due to water shortages as discussed below.

A water supply reduction of up to 50 percent, will have no significant impact on SGCWD. During a hypothetical water shortage, water sales will be reduced by 50 percent. However, most water operating expenses will be also reduced by 50 percent. A meter service charge is a fixed charge and is not affected by the amount of

water sales. Comparison of SGCWD's income statements during historical "normal" and hypothetical "catastrophic" years, show that SGCWD's vulnerability to funding shortages when water consumption levels are reduced is minimal.

### 5.2.7 WATER SHORTAGE RESOLUTION

*Section 10632(h)*
*A draft water shortage contingency resolution or ordinance.*

See Appendix K for copy of water shortage contingency resolution.

## 5.3 WATER QUALITY

*Section 10634*
*The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.*

SGCWD supplies water to its customers from 5 active wells, as described in Section 2. SGCWD's Wells No. 7, No. 9, No. 11, No. 12, and No. 14 are located in the Main Basin. One well (Well No. 3) is located in the Raymond Basin but is not used due to water quality issues.

Groundwater from SGCWD's Wells No. 7, No. 9, No. 11, No. 12, and No. 14 meets all federal and state drinking water standards. Water from SGCWD's Well No. 3 in the Raymond Basin is not in operation due to Volatile Organic Chemicals (VOCs) and Nitrate. Under the existing operating plan approved by the CDPH, all water delivered to SGCWD's customers meets CDPH guidelines and is not expected to change over the next 20 years.

### 5.3.1 Five-Year Water Quality and Supply Plan

The Main Basin Watermaster was created in 1973 to resolve water issues that had arisen among water users in the San Gabriel Valley. Watermaster's mission was to generally manage the water supply of the Main Basin. During the 1970s and early 1980s, significant groundwater contamination was discovered in the Main Basin. The contamination was caused in part by past practices of local industries that had carelessly disposed of industrial solvents, referred to as Volatile Organic Compounds (VOCs), as well as by agricultural operations that infiltrated nitrates into the groundwater. Cleanup efforts were undertaken at the local, state, and federal level.

By 1989, local water agencies, including SGCWD, adopted a joint resolution regarding water quality issues that stated that Main Basin Watermaster should coordinate local activities aimed at preserving and restoring the quality of groundwater in the Main Basin. The joint resolution also called for a cleanup plan. In 1991, the Court granted Main Basin Watermaster the authority to control pumping for

water quality purposes. Accordingly, Main Basin Watermaster added Section 28 to its Rules and Regulations regarding water quality management. The new responsibilities included development of a Five-Year Water Quality and Supply Plan, updating it annually, submitting it to the California Regional Water Quality Control Board, Los Angeles Region, and making it available for public review by November 1 of each year. A copy of the most recent "Five-Year Water Quality and Supply Plan" is located in Appendix H.

The Main Basin Watermaster prepares and annually updates the Five-Year Water Quality and Supply Plan in accordance with the requirements of Section 28 of its Rules and Regulations. The objective is to coordinate groundwater-related activities so that both water supply and water quality in the Main Basin are protected and improved. Many important issues are detailed in the Five-Year Plan, including how the Main Basin Watermaster plans to:

1. Monitor groundwater supply and quality;
2. Develop projections of future groundwater supply and quality;
3. Review and cooperate on cleanup projects, and provide technical assistance to other agencies;
4. Assure that pumping does not lead to further degradation of water quality in the Main Basin;
5. Address Perchlorate, N-nitrosodimethylamine (NDMA), and other emerging contaminants in the Main Basin;
6. Develop a cleanup and water supply program consistent with the U.S. Environmental Protection Agency (USEPA) plans for its San Gabriel Basin Superfund sites; and
7. Coordinate and manage the design, permitting, construction, and performance evaluation of the Baldwin Park Operable Unit (BPOU) cleanup and water supply plan.

The Main Basin Watermaster, in coordination with the Upper District, has worked with state and federal regulators, along with local water companies to clean up water supplies. Section 28 of the Main Basin Watermaster's Rules and Regulations require all producers (including SGCWD) to submit an application to 1) construct a new well, 2) modify an existing well, 3) destroy a well, or 4) construct a treatment facility. Main Basin Watermaster prepares a report on the implications of the proposed activity. As a party to the Main Basin Judgment, SGCWD reviews a copy of these reports and is provided the opportunity to submit comments on the proposed activity before Main Basin Watermaster Board takes its final action.

There are no known threats of contamination to the Main Basin Wells and therefore there a no anticipated impacts to groundwater supplies.

## 5.4 DROUGHT PLANNING

*Section 10631(c)(1)*
*Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) an average water year, (B) a single dry water year, (C) multiple dry water years..*

SGCWD produces water from the Main Basin. As a result of the Main Basin management, SGCWD has not experienced water supply deficiencies. The management of the Main Basin is described in Section 4.2. Information regarding the reliability of the groundwater supplies for SGCWD is based on the 51-year annual rainfall data within the San Gabriel Valley (Table 2). Table 2 summarizes the rainfall within San Gabriel Valley from 1958-59 through 2008-09. According to the rainfall data on Table 2, the 51-year average rainfall within SGCWD's service area is about 17.8 inches. Therefore, fiscal year 1996-97 represents an average water year for SGCWD in which the total amount of rainfall was about 17.5 inches. A single dry year for SGCWD was experienced in 2006-07 in which the total amount of rainfall was about 4.9 inches. A multiple dry year sequence for SGCWD is represented from fiscal year 2006-07 to fiscal year 2008-09. During those years, the total amount of rainfall was about 4.9, 16.4, and 14.0 inches respectively.

The sole source of supply for the SGCWD is groundwater. Both supplies (Raymond Basin and Main Basin) are managed to protect groundwater supplies. See discussion in Section 5.2 regarding water shortage.

### 5.4.1 GROUNDWATER SOURCES IN RAYMOND BASIN

SGCWD has rights to produce groundwater from the Pasadena Subarea of the Raymond Basin.

As discussed in Section 4.2.1, the Raymond Basin has been adjudicated and is managed. SGCWD's historical production from Raymond Basin is zero. Raymond Basin is a well managed basin and should have sufficient groundwater supply over the next 20 years under single year and multiple year droughts.

### 5.4.2 GROUNDWATER SOURCES IN MAIN SAN GABRIEL BASIN

SGCWD produces all of its groundwater through its seven active wells in the Main Basin. The groundwater supply from the Main Basin is pumped to the reservoir storage facilities and then delivered to SGCWD's customers.

As noted in Section 4.2, the Main Basin is managed by the Main Basin Watermaster. Section 42 of the Main Basin Judgment (Basin Operating Criteria) states in part "*…Watermaster shall not spread Replacement Water when the water level at the Key Well exceeds Elevation two hundred fifty (250), and Watermaster shall spread Replacement Water, insofar as practicable, to maintain the water level at the Key Well*

*above Elevation two hundred (200).*" Plate 5 shows the historical fluctuation of the Key Well since the Main Basin was adjudicated in 1973 and demonstrates that the Main Basin was generally operated between elevation 250 feet and 200 feet above msl. Furthermore, at elevation 200 feet msl at the Key Well, the Main Basin has about 7,600,000 acre-feet of available storage. During the period of management under the Main Basin Judgment, significant drought events have occurred from 1969 to 1977, 1983 to 1991, 1998 to 2004, and 2006 to present. In each drought cycle the Main Basin was managed to maintain its water levels. **Therefore, based on historical management practices, SGCWD will have adequate groundwater supply from the Main Basin over the next 20 years under single and multiple droughts.**

### 5.4.3 PROJECTED GROUNDWATER SUPPLY

SGCWD does not expect any significant population growth within its service area, as discussed in Section 2. Therefore, SGCWD's water demands will not change significantly within the next 20 years. As shown on Table 20, the maximum groundwater production for the last ten years was about 8,000 acre-feet. The projected amount of groundwater to be pumped over the next 20 years is not expected to exceed 8,000 acre-feet per year (Table 20). As noted earlier, the Raymond Basin and Main Basin are managed to maintain adequate future supplies.

### 5.4.4 DROUGHT ACTION STAGES

*Section 10632(a)*
*Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*

The action stages for water shortages apply to drought situations as well. See section 5.2 for discussion regarding stages of action available to the District. Action stages can require up to 50 percent reduction in use with the consequence of severe penalties in the event that the reduction is not achieved by individual users.

SGCWD also conducts a monthly check of water production/sales records to determine any unusual losses within its water system. If the losses continue and are excessive (more than 10 percent), SGCWD will perform a system wide leak detection and repair to minimize water losses.

#### 5.4.4.1 DRY 3-YEAR SUPPLY

*Section 10632(b)*
*An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historical sequence for the agency's water supply.*

*Section 10632(i)*
*A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis 10632(i).*

SGCWD's three-year drought sequence was fiscal years 2006-07, 2007-08 and 2008-09. During those fiscal years, SGCWD had adequate water supply to meet its demands, as shown on Table 7. SGCWD did not experience water supply problems to meet customer's demands. It is anticipated SGCWD will be able to provide adequate water to its customers in the next three-year period. Based on the 2006-07, 2007-08, and 2008-09 drought years, it is estimated that the water supply available during the next three water years is at least 7,700 acre-feet.

SGCWD conducts a monthly check of water production records to determine losses within its water system. SGCWD also monitors water consumption on a regular basis. SGCWD takes into consideration factors that may affect consumption, such as precipitation. SGCWD prepares an Annual Report that includes water production and consumption. Such reports are used to determine seasonal and annual fluctuations in water production and water use.

### 5.4.5 WATER SUPPLY RELIABILITY

> *Section 10635(a)*
> *Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*

SGCWD will continue to use groundwater as its future water supplies over the next 20 years. The following sections discuss SGCWD's water service reliability assessment, which compares SGCWD's supply and demand over the next 20 years during normal, dry and multiple dry years. Table 20 presents a summary of the results shown below.

#### 5.4.5.1 NORMAL WATER YEAR

As previously discussed, SGCWD's projected normal water year supply over the next 20 years in five-year increments was based on the SGCWD's 2015 and 2020 Urban Water Use Targets of 154 GPCD and 142 GPCD, respectively. SGCWD's projected demand was based on the projected supply and estimated unaccounted water losses, as shown in Table 7. The comparison of SGCWD's projected supply and demand during a normal water year is shown in Table 26. As shown in Table 26, SGCWD's supply can meet demands during a normal water year for the next 20 years.

#### 5.4.5.2 SINGLE-DRY YEAR

As shown on Table 2, SGCWD experienced a single-dry year during fiscal year 2006-07 and a normal water year during fiscal year 2005-06. The ratio between the

normal water year and single-dry year was estimated for SGCWD's supply and demand, as shown on Table 7. The comparison of SGCWD's projected supply and demand during a single-dry year is shown on Table 27. As shown on Table 27, SGCWD's supply can meet demands during a single-dry year for the next 20 years.

### 5.4.5.3 MULTIPLE DRY YEARS

As shown on Table 2, SGCWD experienced multiple dry years during fiscal years 2006-07, 2007-08 and 2008-09. The ratio between the normal water year in 2005-06 and multiple dry years were estimated for SGCWD's supply and demand, as shown on Table 28. The comparison of SGCWD's projected supply and demand during multiple dry years is shown on Table 28. As shown on Table 28, SGCWD's supply can meet demands during multiple dry years for the next 20 years.

Table 29 contains a summary of the data for each of the above scenarios.

# SECTION 6

# DEMAND MANAGEMENT MEASURES

## 6.1 DEMAND MANAGEMENT MEASURES

*Section 10631(f)(1)and(2)*
*(Describe and provide a schedule of implementation for ) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing;(L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-lowflush toilet replacement programs.*

*Section 10631(f)(3)*
*A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.*

*Section 10631(f)(4)*
*An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.*

*Section 10631(g)*
*An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.*

SGCWD is not a member of the California Urban Water Conservation Council (CUWCC). However, SGCWD is a member agency of Upper District, which is a member of the CUWCC. Upper District signed a Memorandum of Understanding (MOU) pledging to implement "Best Management Practices (BMP)," which are cost-effective conservation programs. CUWCC amended Upper District's MOU in December 2008. Records are not kept for each member agency of Upper District.

The 14 BMPs have been organized into five categories. Two categories are Utility Operations and Education, which are referred to as "Foundational BMPs." The other three categories are Residential, Commercial/Industrial/Institutional, and Landscape which are referred to as "Programmatic BMPs."

For purposes in this Plan, the Best Management Practices are equivalent to Demand Management Measures (DMM). Upper District's commitment to water conservation is upheld through the continuation of projects that conserve water and increase the public's awareness of conservation and other water-related issues. SGCWD recognizes that water conservation and demand management measures are important for the reliability of water sources. SGCWD has made continued efforts to address and comply with all Demand Management Measures (DMM). This chapter addresses DMM implemented by SGCWD and Upper District.

### 6.1.1 WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS (10631 (f)(1)(A))

SGCWD implements a water survey program for Single-Family (SF) and Multi-Family (MF) residential customers on an as needed basis. SGCWD provides water survey's if requested by individual customers. Surveys are usually initiated by a high water use or sudden change in water use. SGCWD does not keep records for it's informal water survey program.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.2 RESIDENTIAL PLUMBING RETROFIT (10631 (f)(1)(B))

As a member agency of Upper District, SGCWD implements this DMM through Upper District's CUWCC BMP "Progarammatic: Residential." Upper District's residential plumbing retrofit program consist of rebate programs for high- efficiency clothes washer, high-efficiency toilets, rotating nozzles for sprinklers, weather-based irrigation controllers, and synthetic turf. Information and water conservation savings regarding these programs are located in MWD's draft 2010 RUWMP which is incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.3 SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR (10631 (f)(1)(C))

As a member agency of Upper District, SGCWD implements this DMM through Upper District's CUWCC BMP "Foundational: Utility Operations - Water Loss Control." Upper District does not have its own distribution system, and relies on MWD's distribution system for delivery of imported water to Upper District's sub-agencies. Therefore, Upper District is not required to fill out a CUWCC annual report for this BMP (System Water Audits, Leak Detection, and Repair). MWD has a CUWCC annual report for this BMP (System Water Audits, Leak Detection and Repair). MWD conducts various system audits and leak detection program for its entire system. Additional information regarding system water audits, leak detection, repair, and water conservation savings can be found in MWD's draft 2010 RUWMP, which is incorporated by reference.

In addition, SGCWD conducts a monthly check of water production records to determine any losses within its water system. If losses are found to be continued and excessive, a system wide leak detection is performed. During the past five years, overall losses for SGCWD's distribution system averaged about 2.4 percent of total production (Table 7), and is generally viewed as an acceptable industry-wide value.

In addition, the SGCWD assists residents in auditing their water use and in identifying and locating water leaks on their property. SGCWD's service representatives are trained to determine if a leak exists in the customer's private water system. If the problem is determined to exist in the customer's private system, the service representative will make the customer aware of the unusual high or low water demand. If the customer makes a request, the service representative will inspect the customer's private system and will make recommendations about repairing or replacing faulty or inefficient equipment.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.4 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS (10631 (f)(1)(D))

As a member agency to Upper District, SGCWD can implement this DMM according to Upper District's CUWCC BMP "Foundational: Utility Operations - Metering." Upper District, in coordination with MWD, meters all water sales for direct use, groundwater replenishment, make-up water, and separately recycled water. Water conservation savings are not available for this BMP.

In addition, SGCWD provides commodity rates for all metered customers based on different meter sizes, class of service, and water use. SGCWD estimated the 2010 total of metered accounts is about 8,900 and indicated no unmetered accounts in

SGCWD's service area. Meters are installed on any new service connections, which are partially covered by the new service connection fees. However, as described in Section 2, the SGCWD's service area is fully developed and only a few new service connections are expected to be installed within the next twenty years. Water conservation savings are not available for this DMM.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.5 LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES (10631 (f)(1)(E))

As a member agency of Upper District, SGCWD can implement this DMM according to Upper District's CUWCC BMP "Programmatic: Landscape." Upper District's large landscape conservation program includes the Sythetic Turf Grant School Program. The goal of the Sythetic Turf Grant School Program is to assist schools with funding for retrofitting large landscape areas with synthetic turf. Through this program, Upper District offers grants of up to $75,000 per site to assist with the cost of installing sythetic turf. Since the start of the program in fiscal year 2005-06, five schools have participated in this program. Based on estimated service life of 10 years for synthetic turf, the total annual water savings for the 5 synthetic turf programs is estimated at 53 acre-feet.

SGCWD has predominantly residential and commercial customers in its service area. It has approximately 110 landscape water customers. SGCWD through MWD in partnership with Upper District continues to promote a public outreach campaign targeting outdoor water use. The campaign includes funding for the promotion of efficient residential watering through irrigation controllers, a watering index to assist in estimating efficient watering times, and a native and California-friendly plant program. More information on the MWD large landscape conservation program can be found in its 2010 draft RUWMP incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.6 HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS (10631 (f)(1)(F))

As a member agency of Upper District, SGCWD can implement this DMM according to Upper District's CUWCC BMP "Programmatic: Residential." This program is available to SGCWD's customers through Upper District, which in partnership with MWD, State Department of Water Resources, CalFed Bay Delta program and the U.S. Bureau of Reclamation, offers a residential high-efficiency clothes washer rebate program. Residential dwellings (single-family homes, condominiums, townhouses, apartments or mobile homes) that are located within Upper District's service area can install a high-efficiency washing machine in place of standard-efficiency washing

machine for a rebate. Residences that install a high-efficiency washing machine could receive a rebate of $200 per washer as of 2008-09. The program began in fiscal year 2002-03. Since the program began, a total of 6,656 rebates have been provided. Metropolitan states that this program saves about 10,000 gallons per year per washer over a conventional top loading washer. Based on an estimated service life of 15 years for each washer, the total annual water savings for 6,656 washers is estimated at 160 acre-feet. Additional information on the high-efficiency washing machine rebate program can be found in Upper District's 2010 UWMP, incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.7 PUBLIC INFORMATION PROGRAMS (10631 (f)(1)(G))

As a member agency of Upper District, SGCWD can implement this DMM according to Upper District's CUWCC BMP "Foundational: Education." Upper District promotes water conservation through its many public information programs. Upper District offers conservation brochures and posters, activity booklets, public outreach displays, oral presentations, and workshops to inform the public of conservation efforts. Upper District also raises awareness about water conservation through paid advertising, press releases, news ads, media events, and through the Speaker's Bureau. Annually, Upper District hosts a water awareness festival (Water Fest) to raise public awareness about water conservation, water quality, and other water-related issues. Water conservation savings are not available for this BMP. Additional information regarding Upper District's public information programs can be found in Upper District's 2010 UWMP.

In addition, SGCWD has provided public information programs to educate and inform the general public about the role water plays, either directly or indirectly, within the community. These include: working with social groups, notifying public about any arising water issues, responding promptly to requests for information, and organizing a water awareness festivals and social events.

SGCWD notifies consumers of the need for water conservation. SGCWD print water conservation messages and tips on water bills to inform customers. SGCWD started this program in April 2008. In addition, SGCWD's customers are also encouraged to participate in other social events and programs hosted by Upper District. These events include the annual Water Fest, 5K walk, "Water Wise Gardens" event, and others. Water conservation savings are not available for this DMM.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.8 SCHOOL EDUCATION PROGRAMS (10631 (f)(1)(H))

As a member agency of Upper District, SGCWD can implement this DMM according to Upper District's CUWCC BMP "Foundational: Education." Upper District directly offers school education programs in an effort to raise awareness of water issues. Upper District started its school education programs in September 1992 and the materials and presentations meet state education framework requirements. Upper District works with both primary and secondary schools to provide technical assistance and educational materials. In addition, Upper District is a member agency of the MWD, which has an education program that offers age/grade-appropriate materials to all schools within Upper District's service area. Water education literature, facility tours, and education tools (i.e. groundwater model) are available through Upper District and MWD and can be loaned to schools within SGCWD's service area at no charge.

Upper District also provides alternative methods designed to involve students in water education. The following is a list of Upper District's school educational programs:

- **Water Awareness Art Contests** – are designed to raise awareness of water issues among children. These include:
  - ✓ *Annual Art Poster Contest for grades K-3rd and 4th – 6th* – the five winning posters for each category receive monetary awards and are printed into sheets and stickers. These ten winning posters are then submitted as Upper District's entries in MWD's poster art contest.
  - ✓ *T-shirt Art Contest for grades 7th – 12th* – the top five selections receive monetary awards, with the top two designs printed onto T-shirts and the top five entries submitted to MWD's upper grade art contest.
- **Solar Cup Competition** – provides high school students the opportunity to build solar powered boats that compete in race and endurance categories. The program offers student participants an opportunity to learn about natural resources, the development/use of alternative fuel sources and protection of water quality.
- **Water Education Grant Programs**
- **Water Education Posters**
- **Water Resource Library** – an on-site library offering a variety of current water education materials for all ages. Resources available for loan include activity books, textbooks, videotapes, and computer software.

A complete list describing all Upper District's and MWD's school educational programs is presented in Upper District's 2010 UWMP and MWD's 2010 draft RUWMP, respectively. Both plans are incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.9 CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL ACCOUNTS (10631 (f)(1)(I))

As a member agency of Upper District, SGCWD can implement this DMM according to Upper District's CUWCC BMP "Programmatic: Commercial, Industrial, and Institutional." Upper District offers a conservation program for commercial, industrial, and institutional facilities (CII). Upper District's program offers commercial, industrial, and institutional facilities rebates for retrofitting existing high water-use fixtures with efficient water-use fixtures. The CII program has included the following fixtures:

1. Commercial High Efficiency Toilet (includes flushometer, tank, and dual flash)
2. Commercial High Efficiency Toilet (new construction)
3. Ultra Low Water Urinal (less than 0.25 gallons per flush (gpf) and Zero Water Urinals
4. Ultra Low Water Urinal and Zero Water Urinals Upgrade or New Construction
5. Water Broom
6. Connectionless Food Steamer
7. Ice Making Machine Tier III standard
8. Dry Vacuum Pump
9. Cooling Tower Conductivity Controller
10. pH Cooling Tower Controller
11. Weather-Base Irrigation Controller and Central Computer Irrigation Controller
12. Rotating Nozzles for Pop-up Spray Head Retrofits
13. Large Rotary Nozzles

The program began in fiscal year 2000-01. A total of 10,568 rebates have been received through this program. Based on an estimated weighted service life of 19 years for CII rebate programs items, the total annual water savings for the 10,568 rebate program items is estimated at 490 acre-feet. As described in Chapter 4, SGCWD has 785 metered commercial and governmental accounts which comprise about 10 percent of all SGCWD’s service connections. SGCWD's customers are encouraged to participate in a conservation program offered by Upper District to commercial, industrial, and institutional facilities located within service area.

Additional information regarding Upper District’s CII program can be found in its 2010 UWMP which is incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.10 WHOLESALE AGENCY PROGRAMS (10631 (f)(1)(J))

SGCWD is a retail agency and therefore cannot implement wholesale agency programs. However, SGCWD is a member of Upper District, a wholesaler which has a number of conservation programs including large landscape conservation programs, public information programs, school education programs, conservation programs for commercial, industrial, and institutional accounts, and others. Detailed information on the Upper District's conservation programs can be found in its 2010 UWMP incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.11 CONSERVATION PRICING (10631 (f)(1)(K))

As a member agency of Upper District, SGCWD can implement this DMM according to Upper District's CUWCC BMP "Foundational: Utility Operations - Pricing." Upper District implements conservation pricing to encourage sub-agencies to conserve water. Additional information regarding Upper District's conservation pricing can be found in its 2010 UWMP incorporated by reference.

In addition, SGCWD participates in conservation pricing programs. SGCWD bills its customers on a commodity bases for metered water use.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.12 WATER CONSERVATION COORDINATOR (10631 (f)(1)(L))

As a member agency of Upper District, SGCWD can implement this DMM through Upper District's CUWCC BMP "Foundational: Utility Operations - Operations." Conservation programs that are available to the SGCWD's customers through the Upper District are coordinated by a water conservation coordinator. The conservation coordinator employed by Upper District promotes water conservation issues and programs. The position was created in 1992 as a full-time position. The water conservation coordinator does research on water managements practices and advises the Upper District Board Members and its subagencies, including SGCWD, on water conservation matters. More information about Upper District's conservation coordinator can be found in its 2010 UWMP, which is incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.13 WATER WASTE PROHIBITION (10631 (f)(1)(M))

As a member agency of Upper District, SGCWD can implement this DMM through Upper District's CUWCC BMP "Foundational: Utility Operations - Operations." Upper District passed Resolution 6-90-266 in 1990 to reduce water demands within Upper District's service area. In addition, Upper District has prepared a draft Urban Water Shortage Contingency Resolution that may be adopted in case of an emergency which will require mandatory reductions in water use within Upper District's service area. Water conservation savings in not available for this BMP.

In addition, SGCWD uses various methods to inform its customers about the importance of water conservation as described in Section 6.1.7.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

### 6.1.14 RESIDENTIAL ULTRA-LOW-FLUSH TOILET REPLACEMENT PROGRAMS (10631 (f)(1)(N))

As a member agency of Upper District, SGCWD can implement this DMM through Upper District's CUWCC BMP "Programmatic: Residential." High-Efficiency Toilets (HET) is a program implemented by Upper District. HETs are distributed for free to qualifying residents. The cost of the HET is funded by Upper District and MWD. MWD can only provide funding for HETs (1.28 gallons per flush or less), which use 20 percent less than Ultra-Low Flush Toilets (ULFTs) (1.6 gallons per flush). A total of 26,960 HETs/ULFTs have been provided through this program since in first began in fiscal year 1992-93. Based on an estimated service life of 20 years for each HET, the total annual savings for the 26,960 HETs/ULFTs is estimated at 1,005 acre-feet. More information regarding the residential ultra-low-flush toilet replacement program is located in MWD’s 2010 RUWMP, which is incorporated by reference.

No evaluation of the effectiveness of this DMM has been performed, and no estimate of water savings has been made.

# SECTION 7

## COMPLETED URBAN WATER MANAGEMENT PLAN CHECKLIST

A completed Plan checklist, with page information indicating where the required element can be found within the Plan.

**Table 1**
**Coordination with Appropriate Agencies**

| Check at least one box on each row | Participated in developing the plan | Commented on the draft | Attended public meetings | Was contacted for assistance | Was sent a copy of the draft plan | Was sent a notice of intention to adopt | Not Involved / No Information |
|---|---|---|---|---|---|---|---|
| **Other water suppliers** | | | | | | | |
| Upper San Gabriel Valley Municipal Water District (Upper District) | X | | | X | X | X | |
| **Water management agencies** | | | | | | | |
| Main San Gabriel Basin Watermaster | X | | | X | | X | |
| Raymond Basin Management Board | X | | | X | | X | |
| **Relevant public agencies** | | | | | | | |
| City of San Gabriel | X | | | X | | X | |
| City of Rosemead | X | | | X | | X | |
| City of Temple City | X | | | X | | X | |
| County of Los Angeles | X | | | X | | X | |
| **Other** | | | | | | | |
| **Other** | | | | | | | |

**TABLE 2**

**ANNUAL RAINFALL IN THE SAN GABRIEL VALLEY**
**FROM 1958-59 THROUGH 2008-09***

| WATER YEAR | RAINFALL IN INCHES |
|---|---|
| 1958-59 | 8.5 |
| 1959-60 | 10.6 |
| 1960-61 | 5.9 |
| 1961-62 | 22.4 |
| 1962-63 | 12.3 |
| 1963-64 | 9.4 |
| 1964-65 | 15.2 |
| 1965-66 | 19.6 |
| 1966-67 | 25.0 |
| 1967-68 | 15.0 |
| 1968-69 | 30.5 |
| 1969-70 | 11.1 |
| 1970-71 | 13.3 |
| 1971-72 | 8.5 |
| 1972-73 | 22.4 |
| 1973-74 | 16.8 |
| 1974-75 | 14.9 |
| 1975-76 | 12.1 |
| 1976-77 | 14.5 |
| 1977-78 | 38.4 |
| 1978-79 | 23.9 |
| 1979-80 | 34.8 |
| 1980-81 | 10.3 |
| 1981-82 | 18.9 |
| 1982-83 | 39.3 |
| 1983-84 | 10.6 |
| 1984-85 | 14.6 |
| 1985-86 | 22.0 |
| 1986-87 | 9.1 |
| 1987-88 | 14.9 |
| 1988-89 | 11.2 |
| 1989-90 | 12.4 |
| 1990-91 | 15.1 |
| 1991-92 | 22.8 |
| 1992-93 | 35.9 |
| 1993-94 | 11.6 |
| 1994-95 | 30.4 |
| 1995-96 | 15.6 |
| 1996-97 | 17.5 |
| 1997-98 | 36.1 |
| 1998-99 | 8.6 |
| 1999-00 | 14.4 |
| 2000-01 | 15.5 |
| 2001-02 | 6.4 |
| 2002-03 | 19.4 |
| 2003-04 | 12.7 |
| 2004-05 | 45.3 |
| 2005-06 | 16.8 |
| 2006-07 | 4.9 |
| 2007-08 | 16.4 |
| 2008-09 | 14.0 |
| **TOTAL** | **907.8** |
| **51-YEAR AVERAGE** | **17.8** |

*Annual rainfall determined as the average of rainfall at San Dimas (station 95), Pomona† (station 356C), El Monte (station 108D), and Pasadena (station 610B).

†Pomona (station 356C) replaced Walnut (station 102D) in 2000-01.

# Table 3
# Climate

| | January | February | March | April | May | June | July | August | September | October | November | December | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Evapotranspiration (in.)** | 2.2 | 2.8 | 4.0 | 5.1 | 5.9 | 6.6 | 7.4 | 6.8 | 5.7 | 4.0 | 2.7 | 1.9 | 55.1 |
| **Average Rainfall (in.)** | 3.6 | 5.5 | 1.9 | 1.2 | 0.5 | 0.1 | 0 | 0 | 0.2 | 1 | 1.4 | 2.4 | 17.8 |
| **Average Temperature ($^{o}$F)** | 54 | 54 | 56 | 59 | 61 | 69 | 72 | 77 | 76 | 70 | 61 | 57 | 63.8 |

Source: Rainfall data from average of four LA County Department of Public Works rainfall stations. Temperature data from www.city-data.com for San Gabriel Valley.
Evapotranspiration data from California Irrigation Management Information System.

**Table 4**
**Population - Current and Projected**

| | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 - opt |
|---|---|---|---|---|---|---|---|
| ***Service Area Population** | 42,600 | 42,900 | 45,000 | 47,500 | 47,500 | 48,800 | 50,100 |

DWR review Table 2

*Population estimated based on 2000 census tract data super imposed over district service area map and prorated by percent of district within tract. 2000 census data then extrapolated for future years based on grow rate of City of San Gabriel since San Gabriel comprises nearly 60% of District population and servcie area.

# Table 5
# Water Deliveries - Actual, 2004-2005

| Water use sectors | 2004-2005 | | | | |
|---|---|---|---|---|---|
| | Metered | | Not metered | | Total |
| | # of accounts | Volume (ac-ft) | # of accounts | Volume (ac-ft) | Volume (ac-ft) |
| Single family | 7,301 | 6,326 | - | - | 6,326 |
| Multi-family | 627 | 532 | - | - | 532 |
| Commercial | 715 | 608 | - | - | 608 |
| Industrial | - | - | - | - | - |
| Institutional/governmental | 70 | 78 | - | - | 78 |
| Landscape | 110 | 78 | - | - | 78 |
| Agriculture | - | - | - | - | - |
| Other | - | - | - | - | - |
| **Total** | 8,823 | 7,623 | - | - | 7,623 |

DWR Review Table 3

# Table 6
# Water Deliveries - Actual, 2009-2010

| | 2009-2010 | | | | |
|---|---|---|---|---|---|
| | Metered | | Not metered | | Total |
| Water use sectors | # of accounts | Volume (ac-ft) | # of accounts | Volume (ac-ft) | Volume (ac-ft) |
| Single family | 7,257 | 3,440 | - | - | 3,440 |
| Multi-family | 709 | 895 | - | - | 895 |
| Commercial | 649 | 1,278 | - | - | 1,278 |
| Industrial | - | - | - | - | - |
| Institutional/governmental | 265 | 255 | - | - | 255 |
| Landscape | 139 | 244 | - | - | 244 |
| Agriculture | - | - | - | - | - |
| Other | - | - | - | - | - |
| **Total** | 9,019 | 6,112 | - | - | 6,112 |

DWR Review Table 4

**Table 7**
**HISTORICAL AND PROJECTED WATER DEMAND**
(ACRE-FEET)

| Fiscal Year | Demand | | | | | | | Urban Water Use Target (GPCD) |
|---|---|---|---|---|---|---|---|---|
| | Groundwater | | | Recycled Water | | | TOTAL DEMAND | |
| | Demand | Sales | Unaccounted Use | Demand | Sales | Unaccounted Use | | |
| 1995-96 | 6,994 | 6,826 | 168 | 0 | 0 | 0 | 6,994 | -- |
| 1996-97 | 7,364 | 7,187 | 177 | 0 | 0 | 0 | 7,364 | -- |
| 1997-98 | 7,156 | 6,984 | 172 | 0 | 0 | 0 | 7,156 | -- |
| 1998-99 | 7,383 | 7,206 | 177 | 0 | 0 | 0 | 7,383 | -- |
| 1999-00 | 7,484 | 7,305 | 180 | 0 | 0 | 0 | 7,484 | -- |
| 2000-01 | 7,610 | 7,458 | 152 | 0 | 0 | 0 | 7,610 | -- |
| 2001-02 | 7,480 | 7,331 | 150 | 0 | 0 | 0 | 7,480 | -- |
| 2002-03 | 7,577 | 7,350 | 227 | 0 | 0 | 0 | 7,577 | -- |
| 2003-04 | 8,092 | 7,849 | 243 | 0 | 0 | 0 | 8,092 | -- |
| 2004-05 | 7,779 | 7,623 | 156 | 0 | 0 | 0 | 7,779 | -- |
| 2005-06 | 7,276 | 7,102 | 175 | 0 | 0 | 0 | 7,276 | -- |
| 2006-07 | 7,665 | 7,481 | 184 | 0 | 0 | 0 | 7,665 | -- |
| 2007-08 | 7,672 | 7,488 | 184 | 0 | 0 | 0 | 7,672 | -- |
| 2008-09 | 7,042 | 6,873 | 169 | 0 | 0 | 0 | 7,042 | -- |
| 2009-10 | 6,378 | 6,112 | 266 | 0 | 0 | 0 | 6,378 | -- |
| 2014-15 (3) | 7,612 | 7,421 | 192 | 0 | 0 | 0 | 7,612 | 154 |
| 2019-20 (3) | 7,348 | 7,163 | 185 | 0 | 0 | 0 | 7,348 | 142 |
| 2024-25 (3) | 7,561 | 7,371 | 190 | 0 | 0 | 0 | 7,561 | 142 |
| 2029-30 (3) | 7,767 | 7,572 | 196 | 0 | 0 | 0 | 7,767 | 142 |
| 2034-35 (3) | 7,973 | 7,772 | 201 | 0 | 0 | 0 | 7,973 | 142 |

# Table 8
# Water Deliveries - Projected , 2014-2015

| Water use sectors | 2014-2015 | | | | |
|---|---|---|---|---|---|
| | Metered | | Not metered | | Total |
| | # of accounts | Volume (ac-ft) | # of accounts | Volume (ac-ft) | Volume (ac-ft) |
| Single family | 7,365 | 4,177 | 0 | 0 | 4,177 |
| Multi-family | 719 | 1,087 | 0 | 0 | 1,087 |
| Commercial | 658 | 1,552 | 0 | 0 | 1,552 |
| Industrial | 0 | 0 | 0 | 0 | 0 |
| Institutional/governmental | 268 | 310 | 0 | 0 | 310 |
| Landscape | 139 | 296 | 0 | 0 | 296 |
| Agriculture | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 |
| **Total** | 9,149 | 7,421 | 0 | 0 | 7,421 |

DWR Review Table 5

# Table 9
# Water Deliveries - Projected , 2019-2020

| | 2019-2020 | | | | |
|---|---|---|---|---|---|
| | Metered | | Not metered | | Total |
| Water use sectors | # of accounts | Volume (ac-ft) | # of accounts | Volume (ac-ft) | Volume (ac-ft) |
| Single family | 7,476 | 4,031 | 0 | 0 | 4,031 |
| Multi-family | 730 | 1,049 | 0 | 0 | 1,049 |
| Commercial | 668 | 1,498 | 0 | 0 | 1,498 |
| Industrial | 0 | 0 | 0 | 0 | 0 |
| Institutional/governmental | 273 | 299 | 0 | 0 | 299 |
| Landscape | 144 | 286 | 0 | 0 | 286 |
| Agriculture | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 |
| **Total** | 9,291 | 7,163 | 0 | 0 | 7,163 |

DWR Review Table 6

# Table 10
## Water Deliveries - Projected , 2025-2035

| | 2024-2025 | | 2029-2030 | | 2034-2035 opt | |
|---|---|---|---|---|---|---|
| | Metered | | Metered | | Metered | |
| **Water use sectors** | **# of accounts** | **Deliveries (ac-ft)** | **# of accounts** | **Deliveries (ac-ft)** | **# of accounts** | **Deliveries (ac-ft)** |
| Single family | 7,588 | 4,149 | 7,704 | 4,261 | 7,821 | 4,374 |
| Multi-family | 743 | 1,079 | 754 | 1,109 | 763 | 1,138 |
| Commercial | 678 | 1,541 | 688 | 1,583 | 698 | 1,625 |
| Industrial | 0 | 0 | 0 | 0 | 0 | 0 |
| Institutional/governmental | 277 | 308 | 281 | 316 | 285 | 324 |
| Landscape | 145 | 294 | 147 | 302 | 149 | 310 |
| Agriculture | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 9,431 | 7,371 | 9,574 | 7,572 | 9,716 | 7,772 |

DWR Review Table 7

# Table 11
# Sales to Other Water Agencies

| Water Distributed | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 opt |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Water sold to other agencies | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | |
| | | | | | | | |
| **Total** | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

deliveries in ac-ft/yr

DWR Review Table 9

# Table 12
## Additional Water Uses and Losses

| Water Distributed | 2004-2005 | 2009-2010 | 2014-2015 | 2019-2020 | 2024-2025 | 2029-2030 | 2034-2035 opt |
|---|---|---|---|---|---|---|---|
| Saline Barriers | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Groundwater Recharge | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Conjunctive Use | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Raw Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Recycled Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| System Losses | 156 | 266 | 192 | 185 | 190 | 196 | 201 |
| Others | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 156 | 266 | 192 | 185 | 190 | 196 | 201 |

deliveries in ac-ft/yr

DWR Review Table 10

# Table 13
# Low Income Projected Water Demands

| Low Income Water Demands | 2014-2015 | 2019-2020 | 2024-2025 | 2029-2030 | 2034-2035 opt |
|---|---|---|---|---|---|
| | | | | | |
| Single-family residential | 104 | 101 | 104 | 107 | 109 |
| Multi-family residential | 109 | 105 | 108 | 111 | 114 |
| | | | | | |
| **Total** | 213 | 206 | 212 | 217 | 223 |

deliveries in ac-ft/yr

DWR Review Table 8

# Table 14
# Total Water Use

| Water Distributed | 2004-2005 | 2009-2010 | 2014-2015 | 2019-2020 | 2024-2025 | 2029-2030 | 2034-2035 opt |
|---|---|---|---|---|---|---|---|
| Total water deliveries (from Tables 5 & 6, & 8 to 10) | 7,623 | 6,112 | 7,421 | 7,163 | 7,371 | 7,572 | 7,772 |
| Sales to other water agencies (from Table 11) | 0 | - | - | - | - | - | - |
| Additional water uses and losses (from Table 12) | 156 | 266 | 192 | 185 | 190 | 196 | 201 |
| **Total** | 7,779 | 6,378 | 7,612 | 7,348 | 7,561 | 7,767 | 7,973 |

deliveries in ac-ft/yr

DWR Review Table 11

# Table 15
## Retail Agency Demand Projections Provided to Wholesale Suppliers

| Wholesaler | 2009-2010 | 2014-2015 | 2019-2020 | 2024-2025 | 2029-2030 | 2034-2035 opt |
|---|---|---|---|---|---|---|
| | | | | | | |
| Upper San Gabriel Valley Municipal Water District | 0 | 0 | 0 | 0 | 0 | 0 |
| Main Basin | 6378 | 7612 | 7348 | 7561 | 7767 | 7973 |
| Raymond Basin | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 6,378 | 7,612 | 7,348 | 7,561 | 7,767 | 7,973 |

deliveries in ac-ft/yr

DWR Review Table 12

# Table 16
# Base Period Range Criteria

| Base | Parameter | Value | Units |
|---|---|---|---|
| 10- to 15-year base period | 2008 total water deliveries | 7,042 | ac-ft/yr |
| | 2008 total volume of delivered recycled water | 0 | ac-ft/yr |
| | 2008 recycled water as a percent of total deliveries | 0% | percent |
| | Number of years in base period | 10 | year |
| | Year beginning base period range | 1995-1996 | fiscal year |
| | Year ending base period range | 2004-2005 | fiscal year |
| 5-year base period | Number of years in base period | 5 | years |
| | Year beginning base period range | 2003-2004 | fiscal year |
| | Year ending base period range | 2007-2008 | fiscal year |

deliveries in ac-ft/yr

DWR Review Table 13

**Table 17**
**Calculation of Baseline Daily Per Capita Water Use**

| Water Use | | | Service Area Population | | Per Capita Water Use | | |
|---|---|---|---|---|---|---|---|
| | | | | | | Average Per Capita Water Use | |
| Fiscal Year | Recorded Groundwater Supply (acre-feet) [1] | Calculated Gross Water Use (gallons per day) [1] | Calendar Year | Calculated Service Area Population [2][3] | Calculated Daily Per Capita Water Use | 10-Year Continuous [4] | 5-Year Continuous [5] |
| 1995-96 | 6,994 | 6,243,380 | 1996 | 38,955 | 160 | | |
| 1996-97 | 7,364 | 6,573,833 | 1997 | 39,238 | 168 | | |
| 1997-98 | 7,156 | 6,387,878 | 1998 | 39,524 | 162 | | |
| 1998-99 | 7,383 | 6,590,838 | 1999 | 39,812 | 166 | | |
| 1999-00 | 7,484 | 6,681,044 | 2000 | 40,102 | 167 | | |
| 2000-01 | 7,610 | 6,793,111 | 2001 | 40,589 | 167 | | |
| 2001-02 | 7,480 | 6,677,402 | 2002 | 41,082 | 163 | | |
| 2002-03 | 7,577 | 6,763,831 | 2003 | 41,581 | 163 | | |
| 2003-04 | 8,092 | 7,223,767 | 2004 | 42,087 | 172 | | |
| 2004-05 | 7,779 | 6,944,108 | 2005 | 42,598 | 163 | 165 | |
| 2005-06 | 7,276 | 6,495,277 | 2006 | 42,654 | 152 | 164 | |
| 2006-07 | 7,665 | 6,842,726 | 2007 | 42,710 | 160 | 163 | |
| 2007-08 | 7,672 | 6,848,439 | 2008 | 42,767 | 160 | 163 | 161 |
| 2008-09 | 7,042 | 6,286,353 | 2009 | 42,823 | 147 | 161 | 156 |
| 2009-10 | 6,378 | 5,693,220 | 2010 | 42,879 | 133 | 158 | 150 |

10-Year Baseline Daily Per Capita Water Use = 165 gallons per capita per day. [6]

5-Year Baseline Daily Per Capita Water Use = 161 gallons per capita per day. [7]

[1] See Table 20

[2] Source: California Department of Finance.

[3] The District service area was overlayed with the 2000 census tracts and the population of tracts with partial coverage was prorated per % of coverage.

[4] Average per capita water use for first base period of 10-year continuous, ending no earlier than December 31, 2004 and no later than December 31, 2010.

[5] Average per capita water use for second base period of 5-year continuous, ending no earlier than December 31, 2007 and no later than December 31, 2010.

[6] Highest value calculated for a 10-year continuous period between 1995-96 and 2008-09.

[7] Highest value calculated for a 5-year continuous period between 2003-04 and 2008-09.

# Table 18
# Base Daily Per Capita Water Use

| Base Period Year | | Distribution System Population | Daily System Gross Water Use (mgd) | Annual daily per capita water use (gpdc) |
|---|---|---|---|---|
| Sequence Year | Fiscal Year | | | |
| Year 1 | 1995-96 | 38,955 | 6.243 | 160 |
| Year 2 | 1996-97 | 39,238 | 6.574 | 168 |
| Year 3 | 1997-98 | 39,524 | 6.388 | 162 |
| Year 4 | 1998-99 | 39,812 | 6.591 | 166 |
| Year 5 | 1999-00 | 40,102 | 6.681 | 167 |
| Year 6 | 2000-01 | 40,589 | 6.793 | 167 |
| Year 7 | 2001-02 | 41,082 | 6.677 | 163 |
| Year 8 | 2002-03 | 41,581 | 6.764 | 163 |
| Year 9 | 2003-04 | 42,087 | 7.224 | 172 |
| Year 10 | 2004-05 | 42,598 | 6.944 | 163 |
| Year 11 | n/a | | | |
| Year 12 | n/a | | | |
| Year 13 | n/a | | | |
| Year 14 | n/a | | | |
| Year 15 | n/a | | | |
| | | Base Daily Per Capita Water Use (Average of years 1-10) | | 165 |

deliveries in ac-ft/yr

DWR Review Table 14

# Table 19
# Base Daily Per Capita Water Use 5-year Range

| Base Period Year | | Distribution System Population | Daily System Gross Water Use (mgd) | Annual daily per capita water use (gpdc) |
|---|---|---|---|---|
| Sequence Year | Fiscal Year | | | |
| Year 1 | 2003-04 | 42,087 | 7.224 | 172 |
| Year 2 | 2004-05 | 42,598 | 6.944 | 163 |
| Year 3 | 2005-06 | 42,654 | 6.495 | 152 |
| Year 4 | 2006-07 | 42,710 | 6.843 | 160 |
| Year 5 | 2007-08 | 42,767 | 6.848 | 160 |
| | Base Daily Per Capita Water Use (Average of years 1-5) | | | 161 |

deliveries in ac-ft/yr

DWR Review Table 15

**Table 20**
**Historical and Projected Water Supply**
(Acre-feet)

| Fiscal Year | Supply | | | | |
|---|---|---|---|---|---|
| | Main Basin | Raymond Basin | Main Basin and Raymond Basin Subtotal | Recycled Water | Total |
| 1995-96 | 6,994 | 0 | 6,994 | 0 | 6,994 |
| 1996-97 | 7,364 | 0 | 7,364 | 0 | 7,364 |
| 1997-98 | 7,156 | 0 | 7,156 | 0 | 7,156 |
| 1998-99 | 7,383 | 0 | 7,383 | 0 | 7,383 |
| 1999-00 | 7,484 | 0 | 7,484 | 0 | 7,484 |
| 2000-01 | 7,610 | 0 | 7,610 | 0 | 7,610 |
| 2001-02 | 7,480 | 0 | 7,480 | 0 | 7,480 |
| 2002-03 | 7,577 | 0 | 7,577 | 0 | 7,577 |
| 2003-04 | 8,092 | 0 | 8,092 | 0 | 8,092 |
| 2004-05 | 7,779 | 0 | 7,779 | 0 | 7,779 |
| 2005-06 | 7,276 | 0 | 7,276 | 0 | 7,276 |
| 2006-07 | 7,665 | 0 | 7,665 | 0 | 7,665 |
| 2007-08 | 7,672 | 0 | 7,672 | 0 | 7,672 |
| 2008-09 | 7,042 | 0 | 7,042 | 0 | 7,042 |
| 2009-10 | 6,378 | 0 | 6,378 | 0 | 6,378 |
| 2014-15 (1) | -- | -- | 7,612 | 0 | 7,612 |
| 2019-20 (1) | -- | -- | 7,348 | 0 | 7,348 |
| 2024-25 (1) | -- | -- | 7,561 | 0 | 7,561 |
| 2029-30 (1) | -- | -- | 7,767 | 0 | 7,767 |
| 2034-35 (1) | -- | -- | 7,973 | 0 | 7,973 |

(1) See Table 7

# Table 21
# Potential Recycle Water Uses

| User Type | Description | Service Area | Acre-Feet |
|---|---|---|---|
| Commercial Irrigation | School | San Gabriel County Water District | 3 |
| Commercial Irrigation | School | San Gabriel County Water District | 2 |
| Commercial Irrigation | School | San Gabriel County Water District | 1 |
| Commercial Irrigation | Cemetery | San Gabriel County Water District | 4 |
| Commercial Irrigation | Park | San Gabriel County Water District | 5 |
| Commercial Irrigation | School | San Gabriel County Water District | 3 |
| Commercial Irrigation | School | San Gabriel County Water District | 29 |
| Commercial Irrigation | School | San Gabriel County Water District | 2 |
| Commercial Irrigation | Park | San Gabriel County Water District | 3 |
| Commercial Irrigation | Park | San Gabriel County Water District | 14 |
| Commercial Irrigation | School | San Gabriel County Water District | 6 |
| Commercial Irrigation | School | San Gabriel County Water District | 7 |
| Commercial Irrigation | School | San Gabriel County Water District | 5 |
| Commercial Irrigation | School | San Gabriel County Water District | 3 |
| | **Total** | | **87** |

DWR Review Table 23

# Table 22
# Water Shortage Contingency - Mandatory Prohibitions

| Examples of Prohibitions | Stage When Implemented |
|---|---|
| Not irrigate during hot hours | 1 |
| Minimize water to flush sewers and hydrants | 1 |
| Shut-off non recycling decorative fountains | 1 |
| Using potable water for paved surface, sidewalk and drive washing | 1 |
| Car washing with running hose | 1 |
| | |
| Irrigate District Facilities more than 2 times a week | 2 |
| Watering after 6:00 am and before 6:00 pm | 2 |
| No new water for landscaping | 2 |
| Draining and refilling spas and pools | 2 |
| Water served in restaurants without request | 2 |
| Using potable water for earthwork | 2 |
| Annexation to the District | 2 |
| | |
| Landscaping:  irrigated more than once a week | 3 |
| | |

DWR Review Table 36

# Table 23
## Water Shortage Contingency - Consumption Reduction Methods

| Consumption | Stage When Implemented | Projected Reduction |
|---|---|---|
| Voluntary reduction | 1 | 10% |
| Mandatory reduction in base use | 2 | 15% |
| Mandatory reduction in base use | 3 | 35% |
| Mandatory reduction in base use | 4 | 50% |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

DWR Review Table 37

# Table 24
# Water Shortage Contingency - Penalties and Charges

| Penalties and Charges | Stage when penalty takes effect |
|---|---|
| No penalty (voluntary reduction) | 1 |
| 2X the current billing rate for consumption over reduction level | 2 |
| 3X the current billing rate for consumption over reduction level | 3 |
| 4X the current billing rate for consumption over reduction level | 4 |
| | |
| | |

DWR Review Table 38

**Table 25**
**Supply Reliability**
(Acre-feet)

| | Average/ Normal Water Year (2005-06) | Single Dry Water Year (2006-07) | Multiple Dry Water Years | | |
|---|---|---|---|---|---|
| | | | Year 1 (2006-07) | Year 2 (2007-08) | Year 3 (2008-09) |
| Anticipated Supply [1] | 7,276 | 7,665 | 7,665 | 7,672 | 7,042 |
| Percent of Normal Year Supply | -- | 105 | 105 | 105 | 97 |
| Anticipated Demand [2] | 7,276 | 7,665 | 7,665 | 7,672 | 7,042 |
| Percent of Normal Year Demand | -- | 105 | 105 | 105 | 97 |

[1] See Table 7
[2] See Table 20

# Table 26

**Projected Normal Water Year Supply and Demand Comparison**

(Acre-feet)

| | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|
| Projected Normal Water Year Supply | | | | |
| Total Supply [1] | 7,612 | 7,348 | 7,561 | 7,767 |
| Percent of Base Year for Normal Year (2005-06) [2] | 105 | 101 | 104 | 107 |
| | | | | |
| Projected Normal Water Year Demand | | | | |
| Demand [3] | 7,612 | 7,348 | 7,561 | 7,767 |
| Percent of Current Year (2008-09) [4] | 108 | 104 | 107 | 110 |
| | | | | |
| Projected Normal Year Supply and Demand Comparison | | | | |
| Difference (Supply minus Demand) | 0 | 0 | 0 | 0 |
| Difference as Percent of Supply | 0 | 0 | 0 | 0 |
| Difference as Percent of Demand | 0 | 0 | 0 | 0 |

[1] See Table 20, last column

[2] Ratio of projected water supply with Base Year for Normal Water Year (FY 2005-06).

[3] Based on Urban Water Use Targets of 154 GPCD in 2015 and 142 GPCD in 2020. See Table 7

[4] Ratio of projected water supply with Current Year (FY 2008-09). Table 7

# Table 27

**Projected Single-Dry Year Water Supply and Demand Comparison**

(Acre-feet)

| | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|
| Projected Single-Dry Year Water Supply | | | | |
| Supply [1] | 8,020 | 7,741 | 7,966 | 8,183 |
| Percent of Projected Normal Year [2] | 105 | 105 | 105 | 105 |
| | | | | |
| Projected Single-Dry Year Water Demand | | | | |
| Demand [3] | 8,020 | 7,741 | 7,966 | 8,183 |
| Percent of Projected Normal Year [2] | 105 | 105 | 105 | 105 |
| | | | | |
| Projected Single-Dry Year Water Supply and Demand Comparison | | | | |
| Difference (Supply minus Demand) | 0 | 0 | 0 | 0 |
| Difference as Percent of Supply | 0 | 0 | 0 | 0 |
| Difference as Percent of Demand | 0 | 0 | 0 | 0 |

[1] Based on ratio between Normal Water Year with Single-Dry Year. See Table 20

[2] Ratio of projected Single-Dry water supply with projected Normal Year supply.

[3] Based on ratio between Normal Water Year with Single-Dry Year. See Table 7

# Table 28

**Projected Multiple-Dry Year Water Supply and Demand Comparison**

(Acre-feet)

| Period Beginning 2015 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Projected Multiple-Dry Year Water Supply | | | |
| Supply [1] | 8,020 | 8,026 | 7,368 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Demand | | | |
| Demand [3] | 8,020 | 8,026 | 7,368 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Supply and Demand Comparison | | | |
| Difference (Supply minus Demand) | 0 | 0 | 0 |
| Difference as Percent of Supply | 0 | 0 | 0 |
| Difference as Percent of Demand | 0 | 0 | 0 |

| Period Beginning 2020 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Projected Multiple-Dry Year Water Supply | | | |
| Supply [1] | 7,741 | 7,747 | 7,112 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Demand | | | |
| Demand [3] | 7,741 | 7,747 | 7,112 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Supply and Demand Comparison | | | |
| Difference (Supply minus Demand) | 0 | 0 | 0 |
| Difference as Percent of Supply | 0 | 0 | 0 |
| Difference as Percent of Demand | 0 | 0 | 0 |

# Table 28

**Projected Multiple-Dry Year Water Supply and Demand Comparison**

(Acre-feet)

(continued)

| Period Beginning 2025 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Projected Multiple-Dry Year Water Supply | | | |
| Supply [1] | 7,966 | 7,972 | 7,318 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Demand | | | |
| Demand [3] | 7,966 | 7,972 | 7,318 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Supply and Demand Comparison | | | |
| Difference (Supply minus Demand) | 0 | 0 | 0 |
| Difference as Percent of Supply | 0 | 0 | 0 |
| Difference as Percent of Demand | 0 | 0 | 0 |

| Period Beginning 2030 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Projected Multiple-Dry Year Water Supply | | | |
| Supply [1] | 8,183 | 8,189 | 7,517 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Demand | | | |
| Demand [3] | 8,183 | 8,189 | 7,517 |
| Percent of Projected Normal Year [2] | 105 | 105 | 97 |
| | | | |
| Projected Multiple-Dry Year Water Supply and Demand Comparison | | | |
| Difference (Supply minus Demand) | 0 | 0 | 0 |
| Difference as Percent of Supply | 0 | 0 | 0 |
| Difference as Percent of Demand | 0 | 0 | 0 |

[1] Based on ratio between Normal Water Year with Multiple Dry Years. See Table 20

[2] Ratio of projected multiple dry years with projected normal water year.

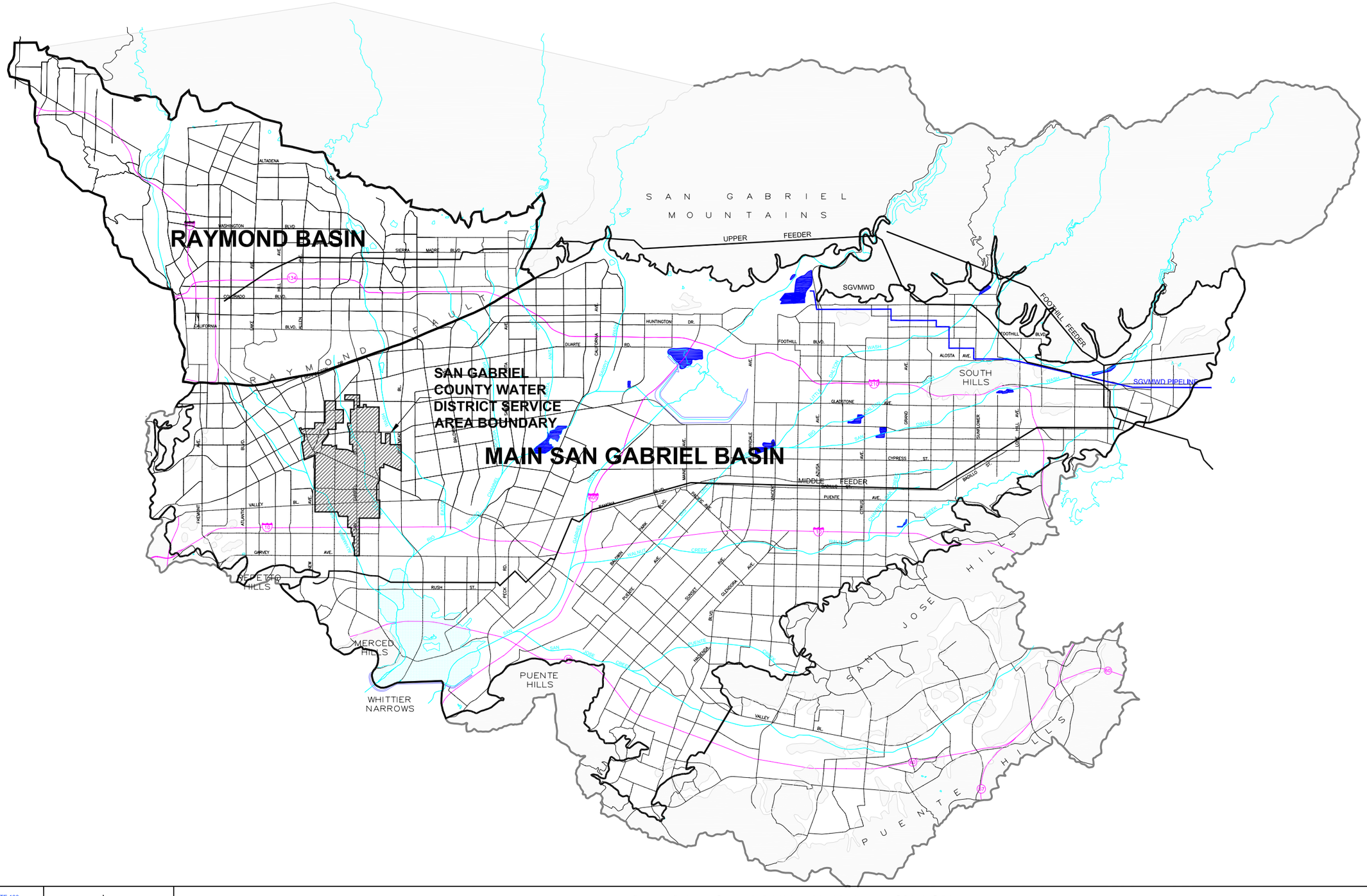
[3] Based on ratio between Normal Water Year with Multiple Dry Years. See Table 7

# Table 29
# Supply Reliability - Historical Conditions

| Average / Normal Water Year | Single-Dry Year | Multiple-Dry Years | | | |
|---|---|---|---|---|---|
| | | Year 1 | Year 2 | Year 3 | Year 4 |
| 7,276 | 7,665 | 7,665 | 7,672 | 7,042 | 6,378 |
| Percent of Average/Normal Year | 105% | 105% | 105% | 97% | 88% |

quantities in ac-ft

DWR Review Table 28

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San Rafael California 94901

2651 W Guadalupe Rd., Suite A209
Mesa Arizona 85202

N

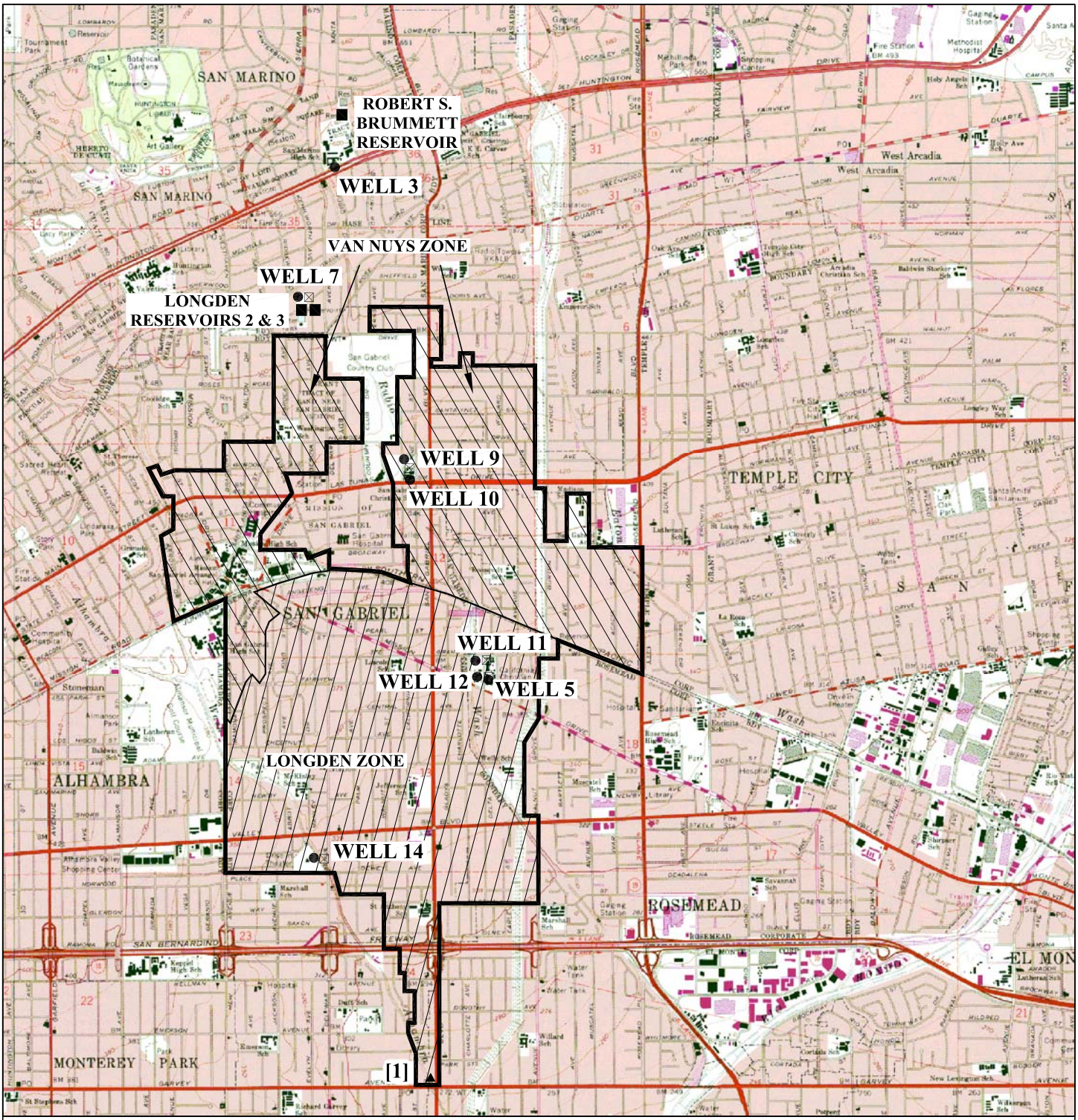
APPROXIMATE SCALE
1" = 11,000'

# SAN GABRIEL COUNTY WATER DISTRICT

## MAIN SAN GABRIEL AND RAYMOND BASINS

F:\JOBS\2339\2010 UVMP\PLATES\PLATE 1 - SGCWD.DWG

PLATE 2




- SOURCE LOCATION
- RESERVOIR LOCATION
- SERVICE AREA BOUNDARY
- PRESSURE ZONE BOUNDARY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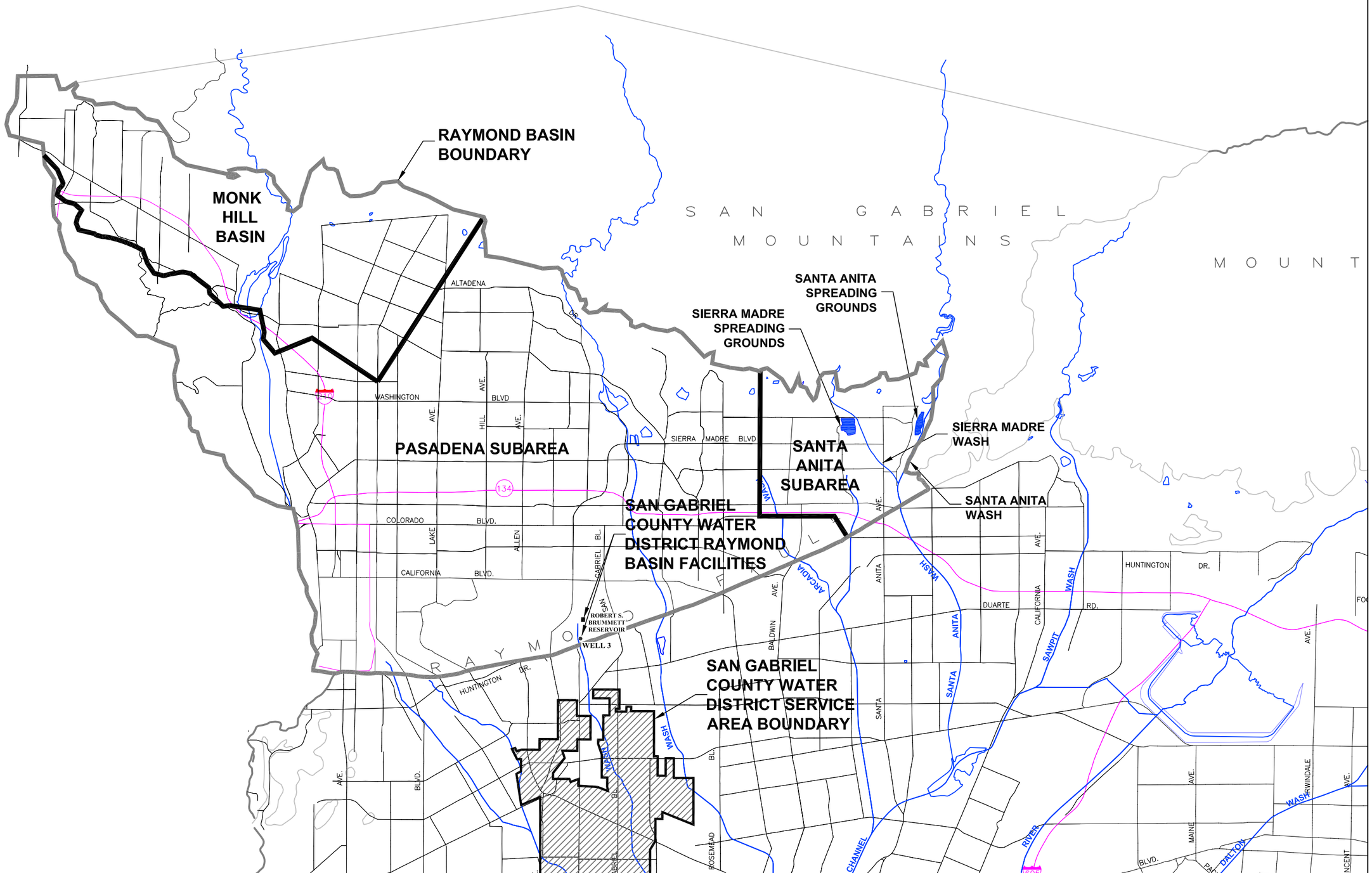
APPROXIMATE SCALE:
1,000' 0 1,000'

# SAN GABRIEL COUNTY WATER DISTRICT

## SERVICE AREA

JOBS:\2339\2010 UWMP\PLATES\PLATE 2-SGCWD.DWG

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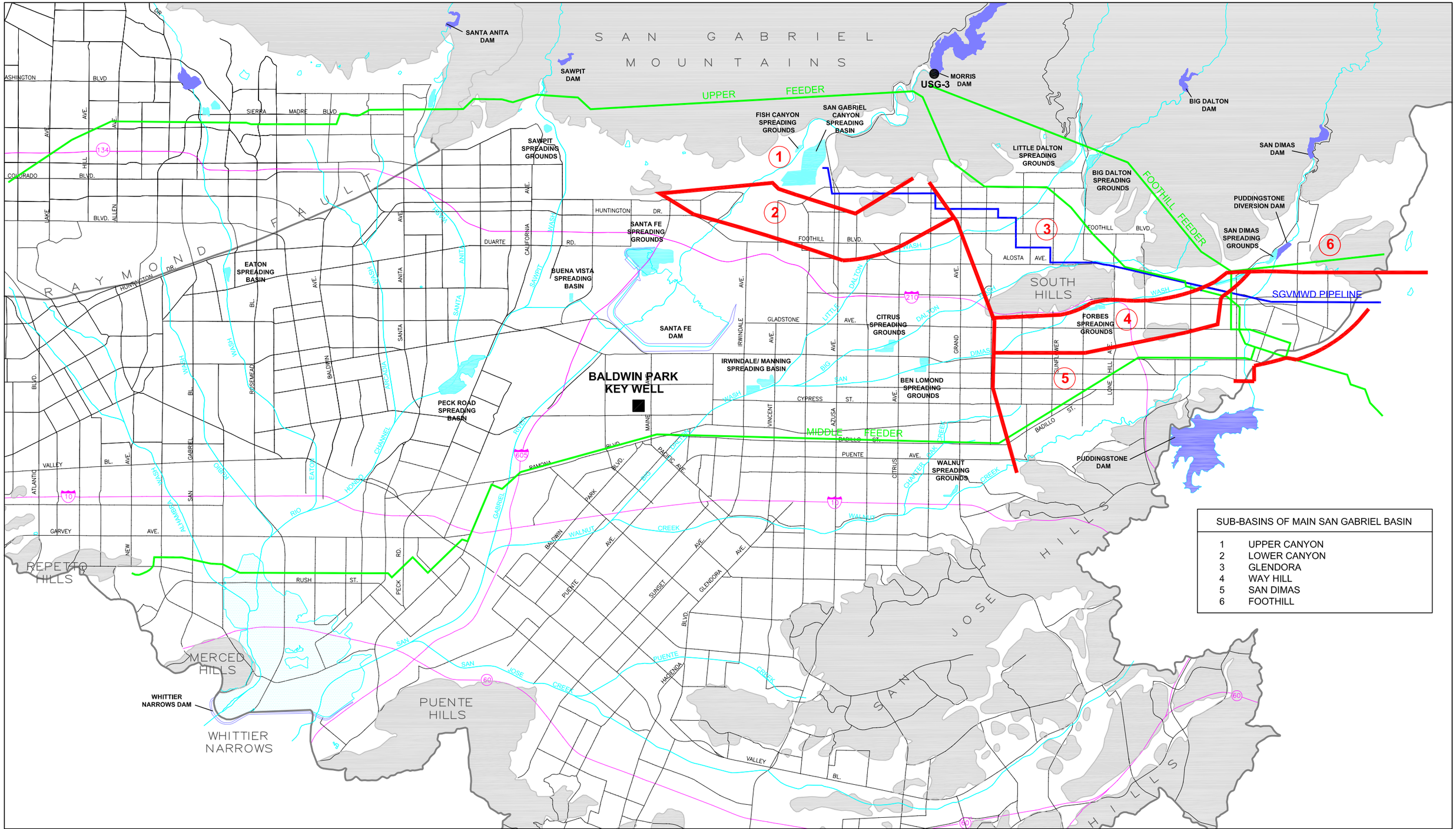
APPROXIMATE SCALE
1" = 6,500'

# SAN GABRIEL COUNT WATER DISTRICT

## RAYMOND BASIN

F:\JOBS\2113\2005 UWMP\PLATES\PLATE 3 - SGCWD.DWG




| SUB-BASINS OF MAIN SAN GABRIEL BASIN | |
|---|---|
| 1 | UPPER CANYON |
| 2 | LOWER CANYON |
| 3 | GLENDORA |
| 4 | WAY HILL |
| 5 | SAN DIMAS |
| 6 | FOOTHILL |

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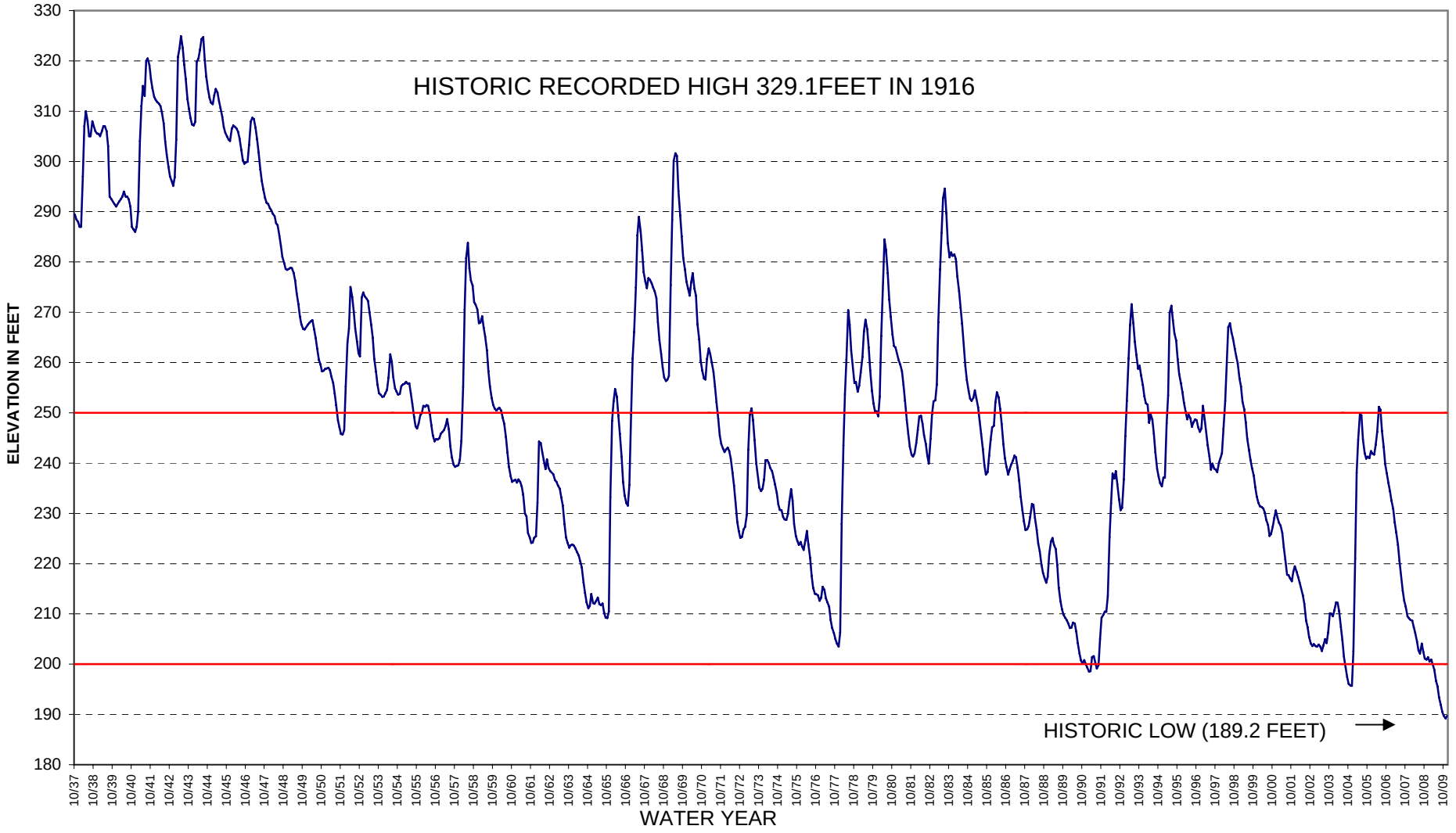
APPROXIMATE SCALE
1" = 7,000'

## SAN GABRIEL COUNTY WATER DISTRICT

# SAN GABRIEL VALLEY/ MAIN SAN GABRIEL BASIN

E:\JOBS\1046\1046-17.1\2010 UWMP\Plates\PLATE 3.DWG
F:\JOBS\1046-17.1.CTB

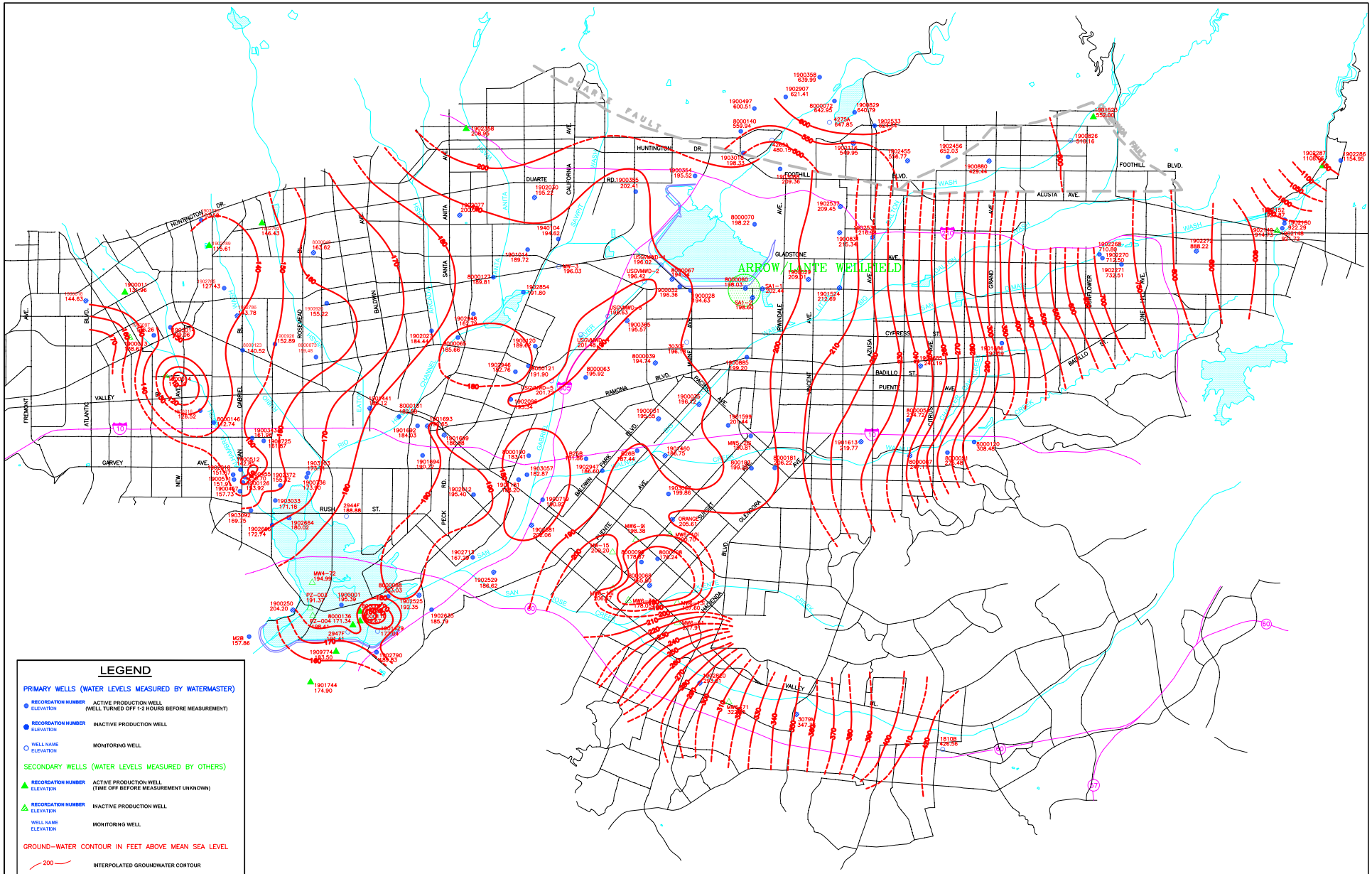



STETSON ENGINEERS INC.
Covina San Rafael Mesa, Arizona
WATER RESOURCE ENGINEERS

## SAN GABRIEL COUNTY WATER DISTRICT

# HISTORIC BALDWIN PARK KEY WELL ELEVATION

PLATE 5





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N

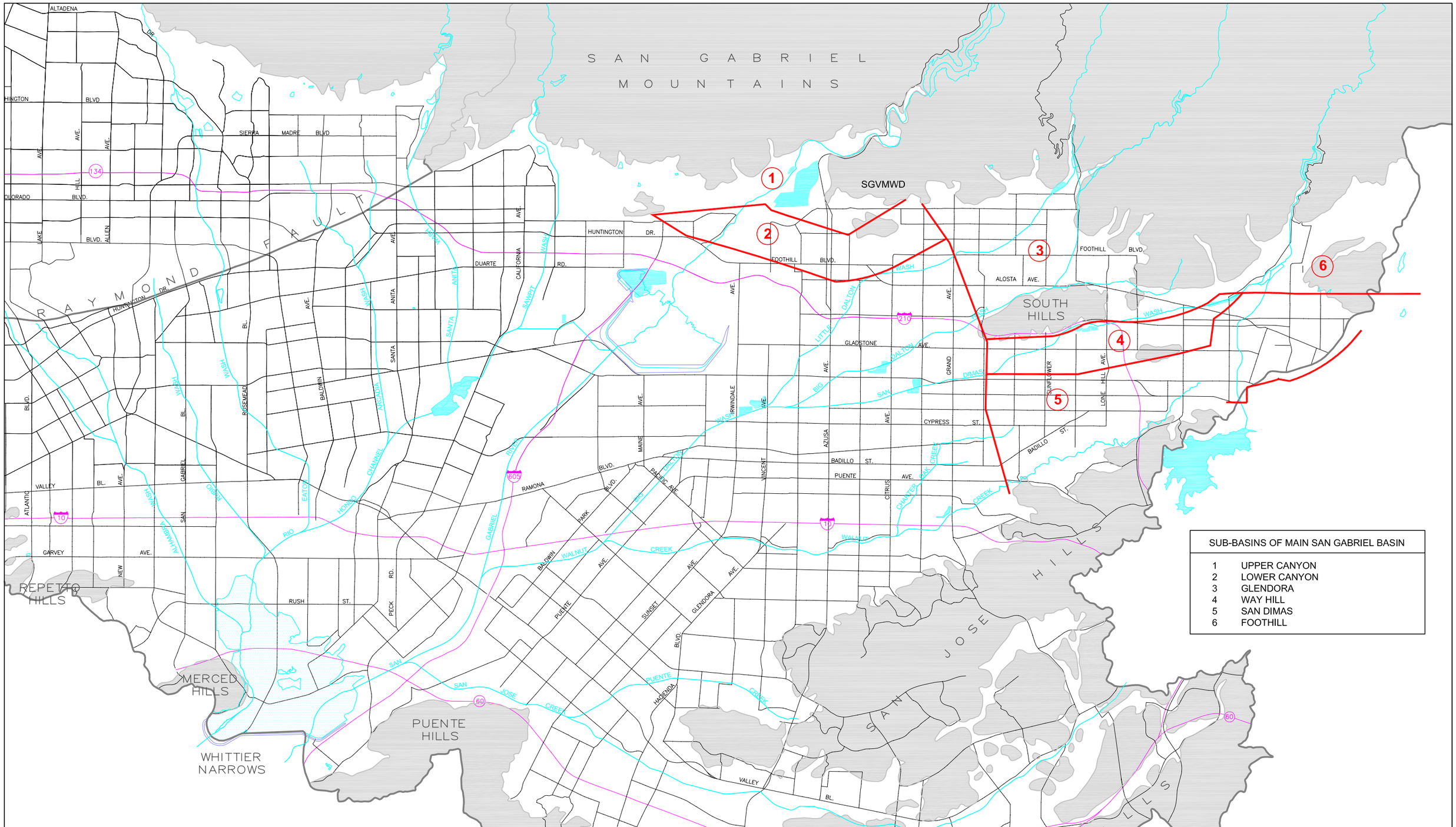
APPROXIMATE SCALE
6,000' 0 6,000'

# SAN GABRIEL COUNTY WATER DISTRICT

## GROUNDWATER CONTOUR MAP FOR SAN GABRIEL BASIN - JANUARY 2010

PLATE 6

F:\JOBS\2339\2010 UVMP\PLATE 5 - SGCWD.DWG

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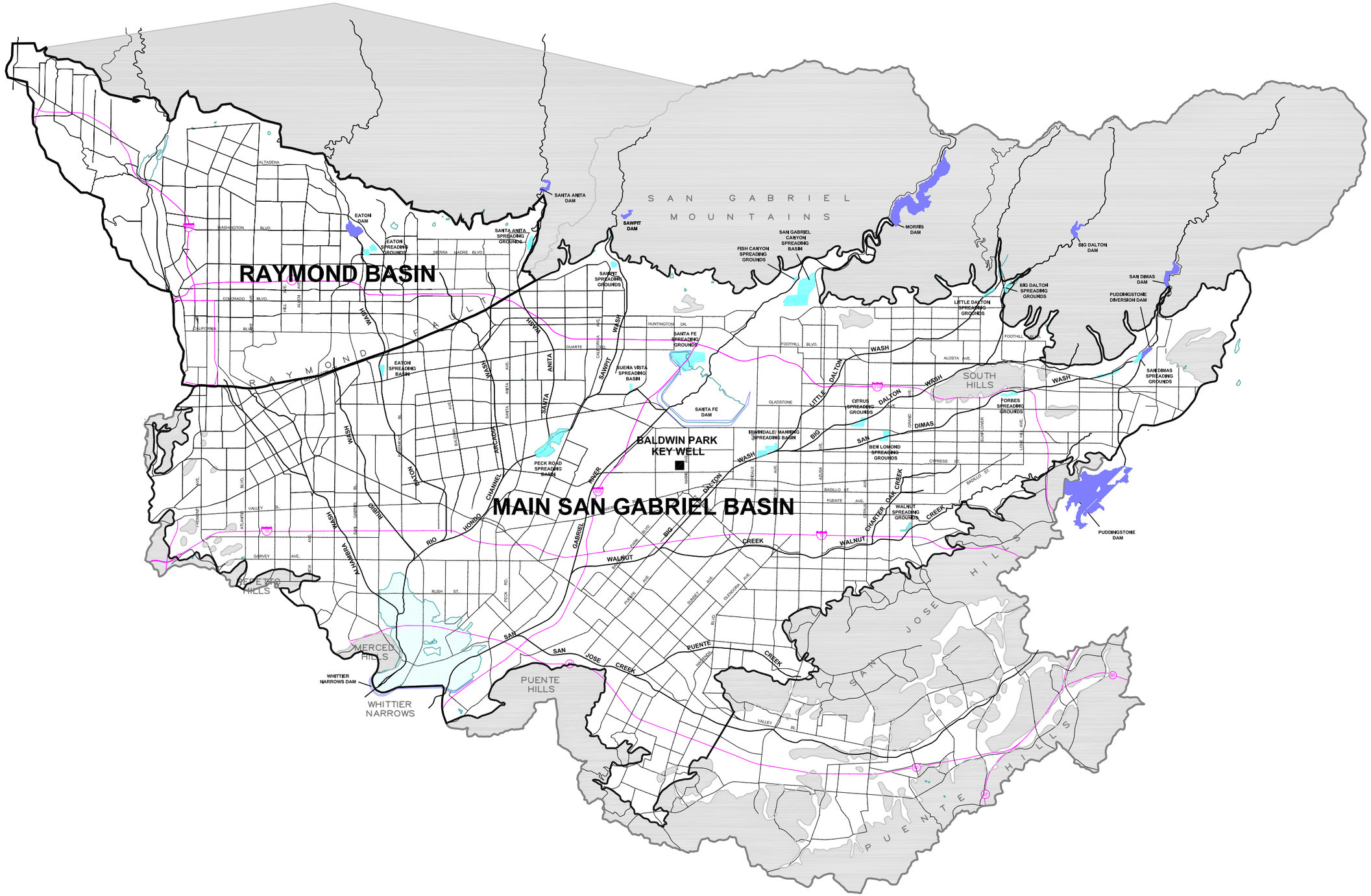
APPROXIMATE SCALE
1" = 7,000'

# SAN GABRIEL COUNTY WATER DISTRICT

## SUB-BASINS OF MAIN SAN GABRIEL BASIN

F:\JOBS\2339\2010 UVMP\PLATE 6.DWG

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APPROXIMATE SCALE
1" =11,000'

# SAN GABRIEL COUNTY WATER DISTRICT

## LOCATION OF SPREADING GROUNDS AND WATER CHANNELS
## SAN GABRIEL VALLEY

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